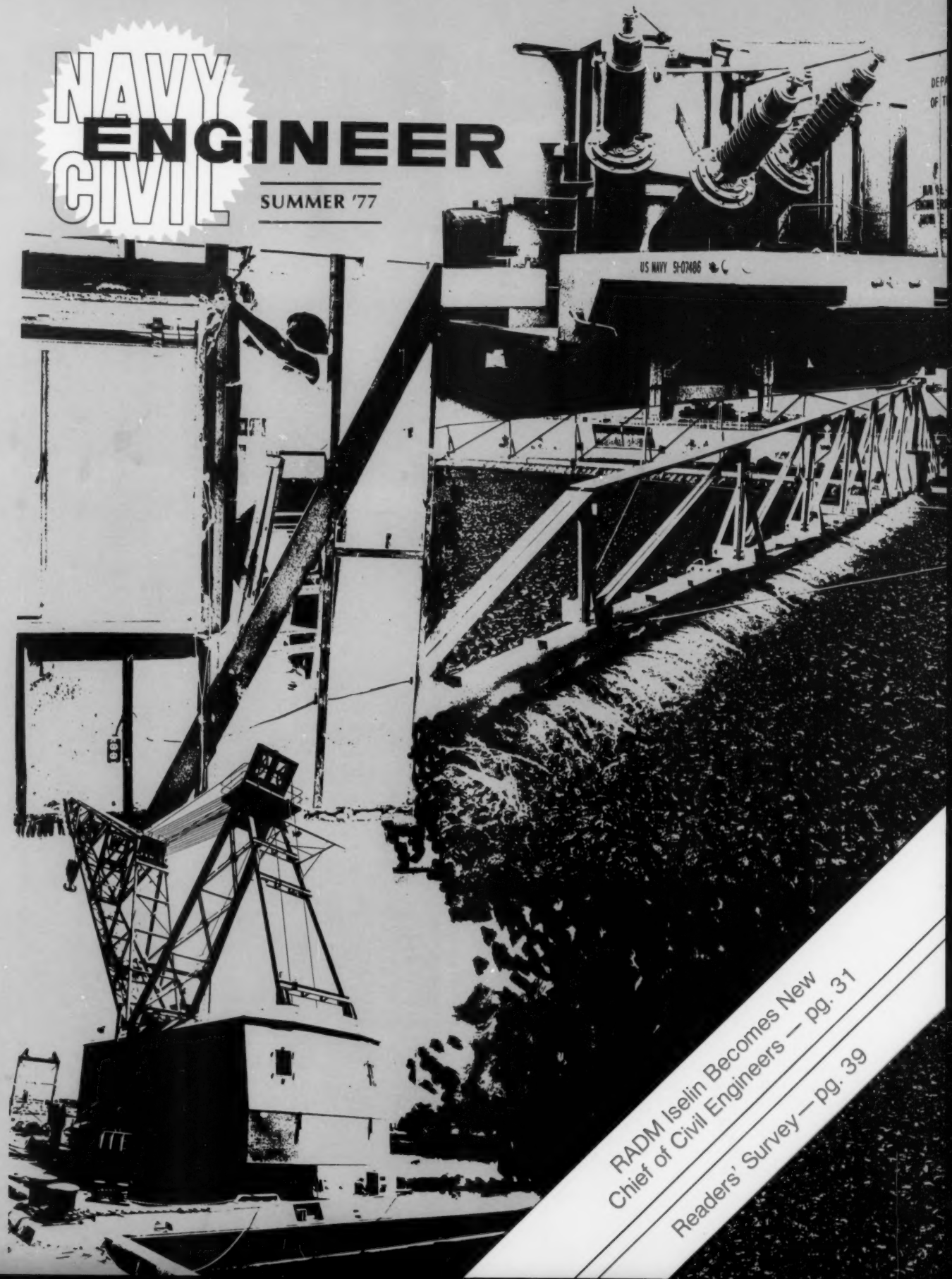
NAVY CIVIL ENGINEER

SUMMER '77



RADM Iselin Becomes New Chief of Civil Engineers — pg. 31

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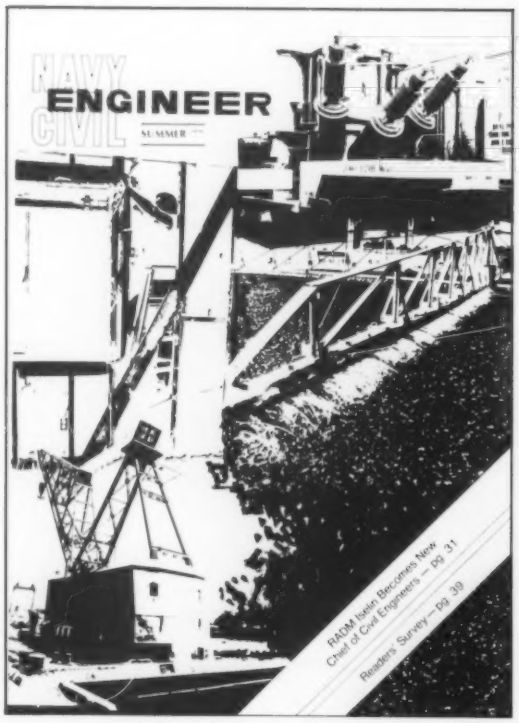

ON THE COVER(S)

Operations and maintenance . . . two big words in the mission vocabulary of the Naval Facilities Engineering Command highlight this issue's cover with photographs by Tom Harris and accompanying articles by headquarters staffers (see page 4).

This edition also contains *Seabee Journal '77,* the annual report of activities of the Naval Construction Force (pp 43-58). Aside from its appearance in this periodical, *Seabee Journal* will receive wide independent distribution. Seabee battalions and similar units who were unable to participate will be featured in later regular editions of *The Navy Civil Engineer.* The cover was designed by Bill Brack, Headquarters, Naval Facilities Engineering Command.

NAVY CIVIL ENGINEER
VOL. XVIII, NO. 2
(NAVFAC P-330)

Published By
NAVAL FACILITIES ENGINEERING COMMAND
Alexandria, Va. 22332

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Issuance of this periodical approved in accordance with Department of the Navy Publications and Printing Regulations, NAVEXOS P-35. It does not alter, amend or supersede official regulations, orders or directives. Cost of printing is charged to appropriated funds for maintenance and operations of the Naval Facilities Engineering Command.

Published quarterly, The Navy Civil Engineer is intended for the information of Regular and Reserve personnel of the Civil Engineer Corps, United States Navy, and key civilian employees of the Naval Facilities Engineering Command, subordinate commands and other mission-oriented activities.

Contributions, comments and criticisms from readers are welcomed. Original manuscripts are particularly invited. Opinions or suppositions expressed by authors are solely their own and do not necessarily reflect command or official concurrence. An inquiry should be directed to the Editor prior to submission of material to prevent duplication and to aid in publication planning. The Editor reserves the right to condense accepted material or to complete minor alterations without author consultation. Material appearing in The Navy Civil Engineer may be reproduced. It is recommended that prior to reproduction an inquiry be made to the Editor for additional data that may have become available.

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This periodical is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20401. Price 75c per copy. Subscription $3.00 annually for domestic subscribers, $3.75 annually for foreign subscribers. Send remittance to the Superintendent of Documents. Entered as a controlled circulation publication at Paramount, Calif.

Published at the Naval School, Civil Engineer Corps Officers (CECOS), Port Hueneme, Calif. 93043.

Manuscripts for editorial consideration and inquiries should be directed to: The Editor, The Navy Civil Engineer Magazine, Code C20M, Naval School, Civil Engineer Corps Officers, Port Hueneme, Calif. 93043. Telephone (805) 982-3104. Government Autovon 360-3104.

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WHY is this man smiling? Maybe he likes his new job as Chief of Civil Engineers and Commander, NAVFAC. Find out what he has to say beginning on pg. 62.

Let Your Voice Be
HEARD!

Complete And Return The Reader Survey On Page 39!

SEABEES once again get center stage in the Seabee Journal 77. Find out what the Sailors in Green have been up to this past year beginning on pg. 43.

O & M — Keeping The Navy's Shore Establishment Afloat

By CAPT. J. A. D'EMIDIO, CEC, USN
Assistant Commander for Operations & Maintenance
NAVFAC HQ
P.E., N.J. and Ohio

Alexandria, Va.

Under broad charters from the Chief of Naval Operations and the Chief of Naval Material, the Naval Facilities Engineering Command (NAVFAC) views its mission in four categories; three of which are facilities planning, facilities acquisition, and facilities management. The fourth category is military readiness, (which includes the Seabees) and will not be further addressed within the scope of this article.

The overall NAVFAC mission involves the provision of many products and professional services. With respect to shore facilites, NAVFAC is multi-faceted and exhibits many personality and character traits.

In certain areas, such as the planning and acquisition of new facilities, NAVFAC has sole responsibility. Regional planning is usually the first step in the planning process which ultimately includes the updating of individual shore installations' master plans. The facilities' relative geographical proximity and other federal property holdings, and the facilities' total urban network are included in the planning.

These are the high level requirements planners, who, together with the Chief of Naval Operations, plan the shore facilities requirements to meet future fleet support requirements.

The facilities acquisition side of the NAVFAC house is responsible for the project and construction management of all Navy facilities including naval reserve, civil works, non-appropriated fund programs, and family housing.

Since most CEC officers are graduates in civil, mechanical, or electrical engineering, or are architects, the work performed in this area is of challenging interest. From an engineer's point of view, it is always rewarding to start with a plot of ground — see a structure emerge from new designs and construction techniques — and then experience the satisfaction of turning over the completed unit to the activity commander for operation and maintenance by his public works staff.

While the facilities planning and acquisition functions are important, the image and reputation of the NAVFAC organization from the fleet point of view rests primarily with the officers and civilian personnel in the facilities management area, i.e., operations and maintenance of the entire shore establishment. To often the group is taken for granted and not adequately recognized for its continuous and direct support of fleet and service units. Of particular importance, and often overlooked, is the fact that over 40% of the Civil Engineer Corps' officers and 69% of NAVFAC's civilian personnel are directly or indirectly involved in facilities management functions.

The accompanying articles by my division directors will provide more detailed insight into the types of direct support provided by the facilities management, i.e., facilities maintenance, real property maintenance activities (RPMA), utilities and energy, transportation, environmental protection, public works center (PWC) and public works department (PWD) management and fire protection.

It is through the dedicated, professional and skilled performance of personnel in the PWDs and PWCs that the total facilities operations and maintenance effort of NAVFAC is realized; therefore, the importance of this facilities management team cannot be overstressed.

Facilities Maintenance Division

By CDR J. G. MARSHALL, CEC, USN
P.E., Mass.

• Alexandria, Va.

The Facilities Maintenance Division, NAVFAC, has three branches: facilities projects, mobile utilities support equipment, and facilities maintenance.

The division has two thrusts — one is upward to CNM, CNO and DoD in the planning, programming and budgeting areas. The other is downward to the field organizations. The upward look is dedicated to that work which must be done three to five years in advance of obtaining the funds needed for project completion. The downward look is dedicated to providing the best possible support in the procurement operations and maintenance of facilities and equipment.

The objectives of the Chief of Naval Operations to improve the material condition of ships in the Fleet and the appearance of shore activities have been promulgated.

The Naval Facilities Engineering Command (NAVFAC) mission objective to "insure that the shore facilities and fixed ocean facilities necessary to support the Navy are available at the best balance between requirement and economy," supports the CNO objectives. The facilities maintenance division is deeply involved in achieving these objectives.

All three branches of the division contribute directly to fleet support. Before discussing the roles of the branches, it would be well to define "fleet support." The September — October 1976 issue of *Surface Warfare Magazine* included an article on Charleston, S. C. in which the question "What is a homeport?" was posed. The magazine was interested in "Charleston as an *operational* homeport and its capacity to support surface warfare forces."

Selected quotations from that article will illustrate fleet support.

CDR. Frederick M. Williamson, USN, commanding officer of the guided missile destroyer *USS SEMMES (DDG-18)* said," . . . a homeport is where you anticipate getting certain support; where you expect things to be accomplished for the ships or by the ships. . . . *There has to be* a close relationship between the ships and the operation homeport *in order for the ship to carry out its mission properly.*" (Emphasis added.)

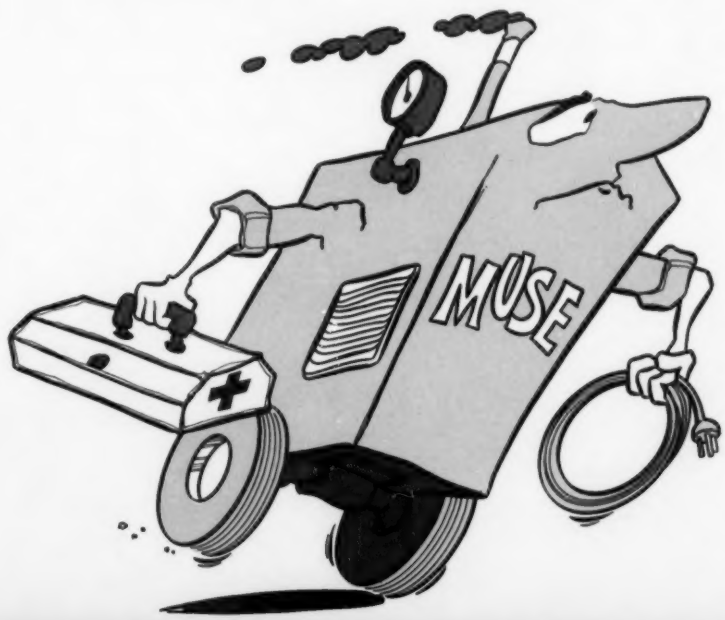
The article quoted ships engineering officers as stating that they are vitally concerned with Charleston's ability to provide "those *critically needed utilities* so that these ships can go *cold iron* to allow for maintenance. They are looking for uninterrupted shore power so they can *get their plants down* and perform needed maintenance." (Emphasis added). The article also stated "Surprisingly, the availability of parking was one of the most frequently mentioned assets to morale of the surface forces in Charleston."

THE FACILITIES PROJECTS BRANCH

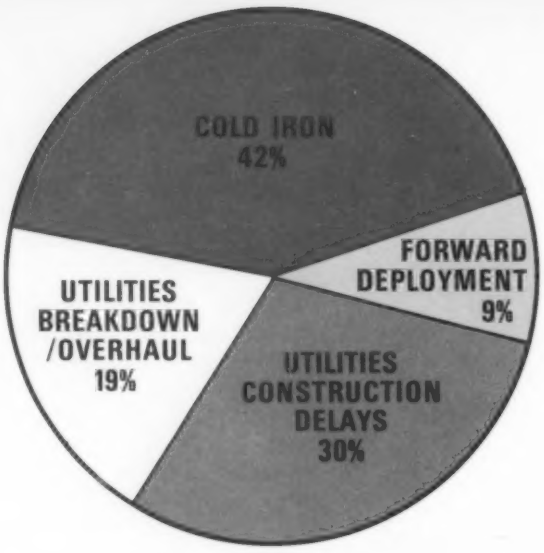
The facilities projects branch of NAVFAC performs three major roles. The first is that of staff support to CNO in establishing policy and procedures for the Navy's major repair projects. The mechanism employed is the Facilities Projects Manual, OPNAVINST 11010.20C. The manual is maintained and updated as required. The branch provides assistance to all echelons of the Navy in interpretation and application of the Projects Manual. The fleet support requirements of the major claimants are greatly facilitated by the branch in this role.

The second role of the branch is to act as staff to the Chief of Naval Material in the development and execution of CNM's major repair program. Necessary liaison, both technical and financial, with the cognizant engineering field division is accomplished by the branch. Status reports are compiled and provided to CNM for use in monitoring program performance.

The third role of the branch is

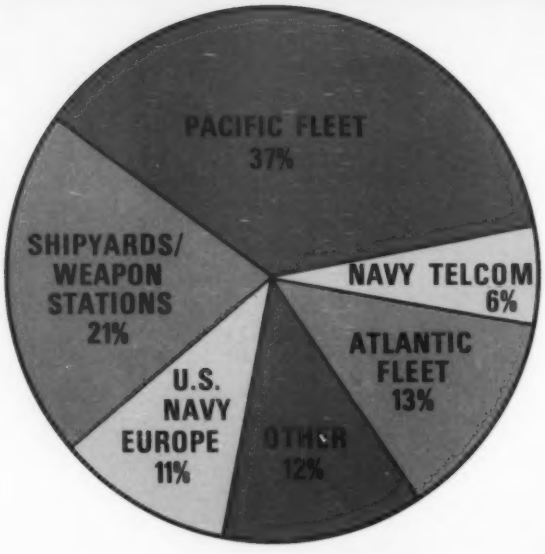


EMERGENCY — MUSE equipment fills a need for emergency electrical energy generating capability during outages; or serves ships which must go "cold iron" to service boilers. MUSE gear can also provide long-term power for remote sites.



MUSE UTILIZATION

FIGURE 1



MUSE USERS

FIGURE 2

to provide staff support to CNO in establishing policy and procedures for the annual inspection summaries (AIS). With renewed interest in Navy major repair projects, the AIS becomes an important instrument in the quest for maintenance and repair funds. The Navy major repair project funding for FY78 is budgeted at $98,756,000. The majority of that funding is in aviation operational facilities, waterfront operational facilities, and utilities.

MOBILE UTILITIES SUPPORT EQUIPMENT

The Mobile Utilities Support Equipment (MUSE) branch is a direct contributor to fleet support. The MUSE program presently provides short term utility services when regular supplies are either interrupted or diminished. Such shortages could occur from equipment failures, temporary overloads, or expeditionary military operations.

Overall management responsibility is vested in the MUSE manager, NAVFAC, who plans, programs and budgets for acquisition, major overhauls, deployments/assignments and logistic support.

Operational management functions are delegated to the Naval Nuclear Power Unit (NNPU), Port Hueneme, Calif., to facilitate equipment engineering, acquisition, inventory management, and deployment of MUSE assets.

Screening of MUSE requests is performed by the Engineering Field Divisions (EFDs). NAVFAC Contracts, Davisville, R. I., provides contracting and technical services for procurement of MUSE hardware and software.

Inspection teams from NNPU visit MUSE users for equipment inspections and technical talks regarding trouble shooting, operator training, and operation and maintenance. These visits help determine the condition of equipment for overhaul, disposal or procurement planning and to monitor equipment usage for the most efficient location.

What does the MUSE program accomplish? It provides the Chief of Naval Operations with an alternative to military construction (MCON) funded projects for serious unprogrammed utility deficiencies. The ability to redistribute forces with less restraint because of utility support requirements is increased. When ships are deployed to areas where shore-based utilities are inadequate or non-existent, when utility plants ashore break down, when MCON projects are delayed, or when utility system catastrophies occur, MUSE provides utility service. Currently, MUSE is deployed to 64 naval activities throughout the world.

What about the future? At present a minimum size of 750KW in MUSE electric power generation has been established. Since the bulk of MUSE requests has involved electric power and steam, other MUSE such as rectifiers, air conditioners, desalinization plants, and compressed air plants are gradually being phased out of the inventory.

An innovative approach to planning, programming and budgeting for MUSE has been implemented. The operations and maintenance expenses have been explicitly related to procurement costs and the impact of each upon the other and the resulting effects on the inventory have been analyzed to arrive at a "balanced program" concept. This "balanced program" is then justified and defended as an integrally related funding requirement.

To complement the programming and budgeting thrusts, additional responsibility to major claimants and using activities has been assigned. Major claimants are required to validate and endorse requests for MUSE and to provide a plan to correct the utility deficiency generating the MUSE requirement. NIF activities will be required to finance a proportional share of annual overhaul costs based on the type of MUSE they use and how long it is used.

FACILITIES MAINTENANCE BRANCH

The Facilities Maintenance Branch has the responsibility to pro-

vide advice and assistance via the maintenance divisions of the EFDs on varied maintenance problems involving direct fleet support facilities such as piers, pierside utilities systems, airfield runways, and aircraft parking aprons.

This branch also has the responsibility for two centrally managed areas in direct fleet support. One of these involves the planning, programming and budgeting for the inspection of VLF towers for the telecommunications command. The program is executed by means of architect & engineer/engineering service (A&E/ES) contracts managed by Commander, Atlantic Division, Naval Facilities Engineering Command and the Commander, Pacific Division, Naval Facilities Engineering Command.

The other direct fleet support responsibility is for fleet moorings. The Commander, Naval Facilities Engineering Command (NAVFAC) centrally manages the entire program including planning, programming, budgeting, and execution. Working closely with the EFDs, Public Works Centers (PWCs), and Construction Battalion Centers (CBCs), the branch procures new components for fleet moorings, overhauls and maintains established moorings, and relocates or removes moorings as required by the fleet.

Just what are fleet moorings? The expressions, as used in the Navy, refers to an off-shore mooring device for securing naval ships when berthing is not available at nearby piers, wharves or when hazardous cargo such as ammunition does not permit berthing at permanent facilities. The mooring consists of a ground tackle arrangement with necessary fittings placed on the bottom of an anchorage area and connected by means of a riser chain to a buoy riding on the water surface by which a ship can be made fast to the ground tackle.

The responsible agency for designing, budgeting, installing, inspecting, maintaining and repairing fleet moorings Navy-wide is NAVFAC.

Today, there are approximately 425 moorings in active service which must be overhauled regularly to prevent disaster or serious losses. All active moorings are inspected annually and repaired in-service where feasible. The overhaul cycle varies from three to five years depending on location of the particular mooring.

The size and shape of buoys vary. The Class "A-A" buoys are the largest in inventory and are mainly used for aircraft carriers, while the Class "D" moorings are used for lighter class ships such as destroyers. The average value of a mooring installation ranges from $35K to $50K with some large installations costing over $100K. The current estimated value of the fleet mooring equipment is in excess of $27 million.

Since considerable lead time is required to obtain mooring components, a number of mooring components and fittings are stocked at some activities. It is NAVFAC's goal to have several complete mooring assemblies of a medium size available at several locations to meet urgent requirements.

Wherever possible fleet mooring maintenance is accomplished by Public Works Center personnel. When this is not feasible, accomplishment is by contract. In October 1975, CBC Gulfport, was designated as the East Coast stock point for all maintenance, overhaul and storage of fleet mooring components. Gulfport has ample capability to assume the function. And, PWC San Diego, continues to handle the West Coast mooring program. Outside of the Continental United States the program is accomplished by PWCs Guam, Pearl Harbor and Subic Bay. The European area is covered by Naval Station Rota, Spain and Naval Activity United Kingdom.

Buoys and their components are subject to abrasion, collision, barn-

(Continued on page 59)

POVERTY — The Navy has fared badly getting maintenance funds because no concentrated effort has been made in planning, programming, and budgeting. Maintenance of overage facilities is very costly and replacement is even more so. Efforts are now being made to improve Real Property Maintenance Activity.

Unit Pricing Estimating Guide

By HARRY E. BRADLEY, JR.
Industrial Engineer, NAVFAC

• Alexandria, Va.

For years, Navy Public Works Planners and Estimators (P&Es) have been using Engineered Performance Standards (EPS, P-700 Series) manuals for cost estimating. In 1975, the Navy increased emphasis on the use of EPS by consolidating and expanding EPS techniques into a new publication, NAVFAC P-716, Unit Price Standards (UPS). This does not mean that UPS was developed to replace EPS. On the contrary, its base is EPS. It was designed to allow estimating by construction unit.

THE DIFFERENCE BETWEEN EPS AND UPS

The basic difference is that EPS itemizes each work description and each task, in turn, is run through the nomograph to add the various time allowances (travel, personal, etc.) and determine the total time allowed for each task. UPS groups several EPS tasks into one total work description.

Before development of UPS, P&Es were using Engineered Performance Standards Handbooks as their primary estimating guide to develop job order cost estimates. As a matter of fact, until recently, P&Es were required to produce only one job order cost estimate. But due to the high percentage of unfunded cost estimates (breakage), it was necessary to change the method for producing cost estimates.

Today, a P&E may be required to produce as many as three cost estimates:

- Scoping Cost Estimate
- Fundable Cost Estimate
- Final Cost Estimate

Each cost estimate works as a stepping stone for the next. For example, if a customer inquires about an office renovation job, the P&E will provide him with a scoping cost estimate describing the type of renovation and a ballpark figure for the total cost. This is a very fast and rough estimate which the P&E should complete within one or two hours. Funds are not accepted based on this estimate.

If the customer wishes to pursue the job further, the P&E will provide him with a fundable cost estimate. The fundable cost estimate is a detailed, planned and estimated job order against which the customer may obligate funds.

The final cost estimate is, of course, the task-by-task craft-by-craft, detailed cost estimate including all labor, materials, equipment, etc., required to perform the job.

What estimating guides or handbooks does the P&E use to develop these cost estimates? In most cases, he uses knowledge and trade experience in developing the scoping cost estimate: the UPS handbook for the fundable cost estimates and EPS manuals for the final cost estimate.

How does a P&E use UPS? And what are the steps he must follow to produce a fundable cost estimate? First, take a look at the format and composition used in development of the UPS handbook.

Referring to the sample work description, work code 14304, in the upper left hand corner, is an index item relating to the work component category and page number in the manual.

Work Codes	Work Content Categories	Page
14000	Roofing	2-127
14100	Framing and Sheathing	2-129
14200	Built-up or Rolled	2-134
14300	Roofing Materials Other than Built-Up	2-139
14400	Components	2-149

The task quantity and the Units of Measure (U/M) indicate the number required and quantity desired to perform the Description of Work. Following the Description of Work is the EPS, or commercial references, used in deriving the allowed time. In this example, the EPS reference, UT-91, allows 35 hours to remove and replace 92.9 m² (10 squares) of shingles. The following allowances are included in the allowed time: 1. Job Preparation — determined by EPS craft allowance; 2. Delay Allowances — determined by EPS craft allowance utilizing multi-man percentages; 3. Partial Day Influence — two man crews; 4. Travel Allowance — Zone 4 on the EPS nomograph.

The materials needed to perform the work description are listed showing the necessary Unit of Issue (U/I) and the Quantity (Qty) required. In addition, UPS provides a list of Special Equipment, when needed. For example, the job may require a truck, forklift, compressor, etc.; if so, they would be listed under Special Equipment. Although Special Equipment requirements are included in the work standard description, the rental hours and the operator manhours for Special Equipment are not included and should be determined by each activity using local rates.

Following is an analysis of how a P&E should apply UPS.

Step 1. The P&E should insure that all preliminary job conditions have been met. He should:

- Know customer requirements
- Know material requirements

- Know job site conditions
- Know special job conditions and/or equipment requirements.

Step 2. Once preliminary job conditions have been met, he then plans the work on a task-by-task basis noting all requirements.

Sample Job Requirements: 1. Repair Building #152 roof—customer requirements; 2. Entire roof must be replaced—job site conditions; 3. Asphalt shingles—13.6 kg (30 lbs.) felt, 278.7m² (3,000 ft.²) Material Requirements;

Step 3. Locate the Unit Price Standard by comparing job work content to the work content categories or by using the alphabetical task descriptions in the UPS index.

Step 4. Once the appropriate unit standard has been selected, reference it by the work code number.

Step 5. Compute each unit price standard to determine:

- Labor Cost
- Transportation and/or Special Equipment Cost
- Material Cost

Labor Cost: Manhours × no. occurrences × local labor rate = Dollar Labor Cost.

Transportation and/or Special Equipment Cost: Rental Hours × Rental Rate = Dollar Equipment Cost.

Operator Manhours × Labor Rate = Dollar Operator Labor Cost. (Note: Vehicle and operator times under special equipment should include actual job travel zone time.)

Material Cost: Material Price × Quantity Required = Dollar Material Cost.

Step 6. Total costs for the unit price standards equals the dollar cost sum for all categories.

The UPS labor hours and materials lists are suggestions for accomplishing the scope of work shown in the work description. P&Es may have to vary to suit either job or local conditions. However, experience to date has shown that UPS derived cost estimates are accurate to within plus or minus five percent of EPS derived final cost estimates.

ESTIMATING — Construction cost estimating can range from "finger in the wind" ballpark estimates to elaborate charts detailing nuts, bolts, boards, manhours, and bricks which provide near-precise cost estimates. The Unit Price Standards guide groups several Engineered Performance Standards and allows accurate cost estimating.

Power To The Fleet!

By CDR. E. J. PELTIER, JR.
CEC, USN
PE, Va.

• Alexandria, Va.

To take some liberties with an anonymous ad writer, "When you're out of utilities, you're out of business!"

The single most important element of fleet support provided by the NAVFAC family — the lifeblood of a fleet unit's homeport — is utilities service. It goes without saying that utilities are necessary to the operation of every shore activity. Perhaps not so obvious, but equally important, is that ships in port must go cold iron to perform needed maintenance and require, as a result, utilities services from the port.

Utilities are provided to the activities and, through the activities, to the ships at cold iron by the Public Works Departments of these activities and by the worldwide network of Navy Public Works Centers. The Energy and Utilities Division of NAVFAC is involved in providing technical support, through NAVFAC Engineering Field Divisions, to the people that make the utilities systems go.

This is done through assistance visits of EFD personnel to activities and consultation with activities (at the activity's request) by EFDs on specific problems. We develop training courses, operations and maintenance manuals and directives, and we establish and promulgate DOD and Navy policy relative to utilities service and energy conservation.

We also develop and implement special programs aimed at specific problems. We provide assistance to activities in project development; administer commercial utilities contracts for them; and in some cases we provide funding for specific programs. We also provide assistance to major claimants and subclaimants in budget development.

Finally, we continually provide technical and management help to other divisions of NAVFAC and other offices within the Navy and Defense Departments as they are involved in utilities systems operations and acquisition.

MECHANICAL UTILITIES SYSTEMS

Our engineers apply their technical and management expertise to the development of more efficient operation and maintenance of steam generation and distribution systems power generation, prime movers, heating, ventilating, air conditioning, refrigeration, desalinization, and incineration systems. Additionally, problems involving fuel selection, safety, and industrial water treatment are dealt with continually.

Examples of our efforts in combustion improvement are the Boiler Tune Up (BTU) and Boiler Efficiency Improvement (BEIP) programs. Simply stated, their objectives are to reduce fuel consumption and air pollution by ensuring maintenance, repair, and recalibration work necessary to return boilers to their optimum operating capabilities is done.

Another program underway is the examination of every formerly coal-fired boiler to determine the feasibility of reconverting it to coal. The potential for fuel oil, gas, and monetary savings from this effort is huge.

ELECTRICAL UTILITIES SYSTEMS

Our electrical engineers are concerned with the care and feeding of all electrical equipment; from generators, switchgear, and distribution systems to motors, controllers, and lightbulbs. To help, we have developed a Computer Assisted Power Systems Engineering (CAPSE) program. This software package is used by electrical engineers at the EFDs not only for trouble-shooting and energy conservation work, but also for development of cost information and design decision making in project development.

We have also implemented a systematic program of cathodic protection for underground utilities

UTILITIES — Energy needs can be met in a variety of ways. Mobile Utilities Support Equipment (MUSE) can fill gaps left in utilities service by breakdown or scheduled maintenance of conventional generating systems — such as the stationary tank and diesel generator.

lines and fuel facilities, and our engineers are becoming increasingly involved in the development of application and maintenance criteria for remote monitoring and control systems of energy and utilities generation, distribution, and use.

Utilities engineers also see to it that activity level administrative telephone systems and services are all they should be. In addition to providing the technical and operational expertise, we manage an annual OPN budget of over $1 million for procurement of telephone equipment for expansion, new requirements, and modernization.

UTILITIES PROCUREMENT

Procurement and continual review of all commercial utilities services is done through our Utilities Divisions by contract specialists and rate engineers. We also maintain the Utilities Procurement Analysis (UPA) program at the Atlantic Division in Norfolk. This program is dedicated to the maintenance of an accurate, current data base and the analysis of all utilities procurement to assure service and energy are obtained at the best possible prices.

SYSTEMS PLANNING

Another example of utilities engineering is the Utilities Improvement Program (UIP). Through periodic surveys by the EFD engineers, the need for increased reliability or capacity of utilities systems is identified and documented. Assistance is then provided to the activity in the preparation of Military Construction projects to provide the necessary improvements. The majority of our steam, electricity, gas, water, and sewage systems were installed in the 1940s. After more than 35 years of service there is considerable deterioration beyond the help of routine preventive maintenance.

The need for replacements, plus changes in activity mission, new weapons systems, and increased air conditioning all contribute to increased utilities requirements, met through the survey-generated projects which comprise the UIP. Priority ranking of the UIP projects by NAVFAC engineers serving as technical advisors to the major claimants provides the claimants and CNO the technical evaluation needed to allocate Military Construction funds to the most important utilities needs.

ENERGY CONSERVATION

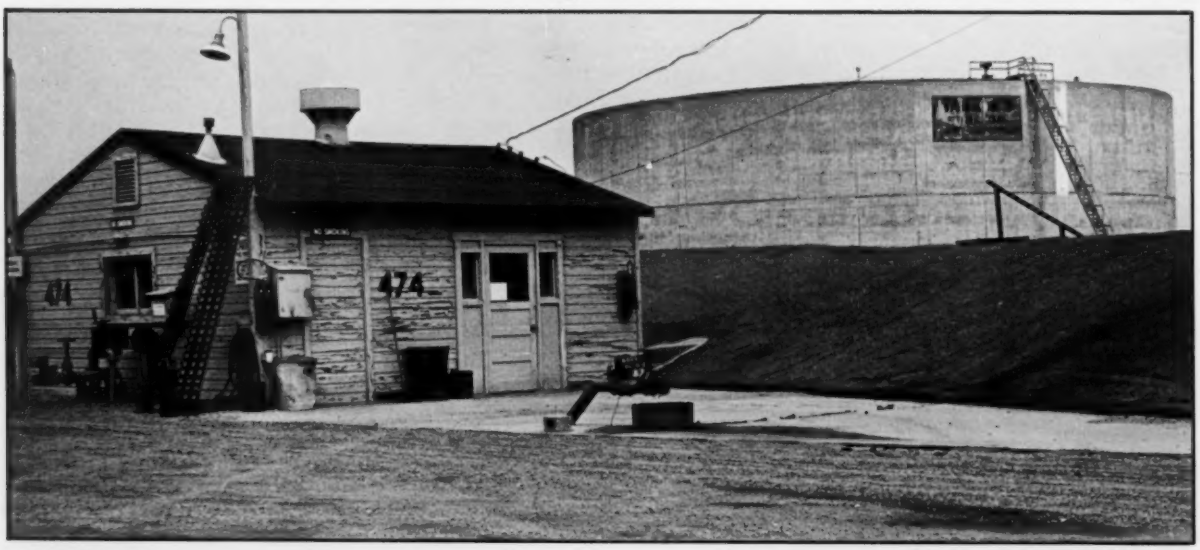
The other side of the coin is the energy management function of NAVFAC. Two things happen as a result of what our energy engineers are doing. First, fleet effectiveness is directly and importantly improved in that we are providing to the fleet the most universal of all commodities . . . money; money made available by the more efficient use of increasingly costly energy. Second, energy use is managed in vigorous pursuit of the high priority national goal to conserve precious non-renewable energy resources.

The NAVFAC energy management campaign is conducted, through EFDs, on a number of fronts. The bulk of the effort has gone into the Energy Conservation Investment Program (ECIP). In fiscal year 1976 Congress authorized for the first time a separate dedicated program of energy conservation projects in the Military Construction Act.

This $28 million program will result in an annual savings of $7 million. Most of the FY76 projects have recently been completed and should now begin to slow the escalating cost of energy needed to maintain our shore establishment. The second year's program (FY77) of $42 million is now being implemented, and it promises an additional $10 million in annual savings.

The point of diminishing returns on investment has not yet been met. Over the next few years, Navy shore facilities are scheduled to be gradually retrofitted with energy saving modifications so that they will use the least energy economically possible. These quick payback ECIP projects are required to be energy saving retrofits of existing shore facilties and may encompass all categories of buildings.

Typical projects include insulation and storm windows, heat recovery systems, lighting conversions, and energy monitoring and control systems. Their average payback of four years based on simple amortization-investment cost divided by annual savings is an indication of how recent energy cost



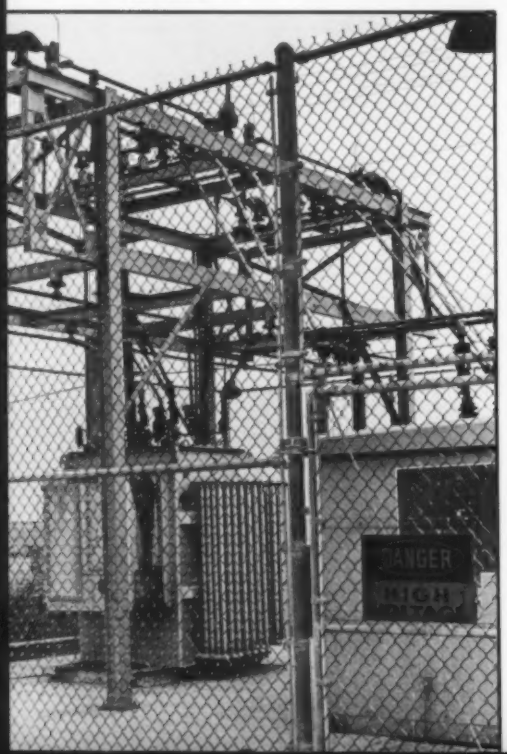
increases have made profitable many building features that originally were not cost effective.

CONSERVATION SURVEYS

The Chief of Naval Operations, in 1974, realizing that rising costs of energy for shore facilities could soon detract from fleet and air operations, directed NAVFAC to conduct energy conservation surveys of all shore activities. The immediate goal was to help each activity reduce energy consumption by at least 15% from a FY73 baseline.

Many activities have already exceeded this goal although shore activities, overall, are currently only 14% below this baseline. Over 250 surveys have been completed since 1974 by the six EFDs, using teams of from one to five engineers spending several days or weeks at each naval activity in their regions. Two hundred ECIP projects with a potential annual savings of $35 million have been identified as a result.

Additional savings have been identified by conservation education and through retrofit projects that are within the activity commander's authority or that of the major claimant. Return visits to each activity are now underway and as the price of energy increases, the opportunity for locating more energy conservation fixes also increases.



CONSERVATION — Saving energy remains a high-priority goal for the Navy. Mandated 15% cutbacks in consumption have been met in some instances although shore facilities overall are now only 14% below the FY73 base.

ENERGY USE DATA

One of the first programs to be implemented in the DOD Energy Conservation Program was the Defense Energy Information System (DEIS). Each month, all naval activities report directly to the Defense Logistics Agency (DLA) data on the consumption of each energy type, usage from the comparable period of the baseline year (FY73), and the cost of the energy used.

The report generated from this data is reviewed by FEA, DOD, CNO, the major claimants, subclaimants, and systems commands to evaluate performance against conservation goals. NAVFAC, through the EFDs, acts as CNO's agent for DEIS-2, monitoring the quality of data, correcting it if necessary, and maintaining baseline allocations to the major claimants. The DEIS-2 report is the only energy consumption/cost information in DOD and is the cornerstone of the Energy Conservation Program.

ENERGY USE TRAINING

NAVFAC also makes every effort to provide the shore establishment with energy conservation information and training. The Civil Engineer Corps Officers School (CECOS) Energy Resource Management Seminar is a four day course for C.O.s, PWOs and activity engineers held four times a year to keep them abreast of the latest happenings in the field and to provide a forum for discussion.

At the operator level, a correspondence course in energy conservation action has been developed and is available from the Naval Technical Training Center in Norfolk. This effort is expected to get increased emphasis in the future.

ENERGY MANAGEMENT SUPPORT

NAVFAC provides support to the Navy Energy Office (OP-413) for shore facilities energy conservation. In this regard, we are members of the Navy Energy Action Group and the DOD Energy Planning Panel. NAVFAC also is the lead system command for the Chief of Naval Material in matters of shore facilities energy conservation. We are expected to use our initiative, imagination, and enthusiasm to stiumlate conservation as well as respond to policy and directives from the national decision makers.

INCREASED EMPHASIS

There is much more to be done. We expect, in the very near future, to have the resources which will allow us to step out in several new, high technology areas and to put more effort in some areas whose surfaces we have barely scratched. As examples, we need to develop criteria for the *optimum* monitoring and control system at each activity. We need to apply our tune-up expertise to our large air conditioning systems. We need to know more about conservation of energy in industrial processes . . . and how properly to survey an activity for Total Energy application.

In view of continuously rising energy costs and possible future curtailments, we are being forced to look into these and other innovative high technology areas for increased conservation. The efforts now underway must be continued and redoubled so that familiarity will not breed forgetfulness.

But our program must evolve into a more sophisticated engineering study of new ways to use unconventional energy, such as solar, wind, and geothermal energy and refuse derived fuels. The increased efforts of this Energy Engineering Program will enhance the ability of the Navy to perform its mission in a future certain to hold higher energy costs and a scarcity of fossil fuels.

It is very hard to make a clear distinction among the duties of the mechanical, the electrical, and "energy" engineers and analysts. Within NAVFAC and its EFDs, the various programs overlap more often than not. We are all utilities engineers and as such, are enthusiastically dedicated to the adequate, reliable, efficient, and economical supply of utilities services to the line commanders of the Navy.

Getting From Here To There

By S. J. WALL
Transportation Division, NAVFAC

• Alexandria, Va.

Transportation equipment support is one of the Navy's older logistics programs. This program is continually being changed by the impact of energy, environmental and legislative actions. The energy situation may be expected to bring about major future changes in the Navy program as the automotive and mobile equipment industry within the United States strives for greater energy economies. Future vehicles will be smaller and lighter and mobile equipment will have greater versatility.

The major functional responsibilities of NAVFAC's Transportation Division, as the designated transportation equipment agent for Navy shore activities and ships, are to:

• Administer, as the Chief of Naval Material (CNM) designated acquisition manager for transportation equipment, determination of requirements, formulation of the procurement and assignment of transportation equipment.

• Develop for Navy-wide application, technical and management standards, procedures and criteria for the most cost effective operation and maintenance of transportation equipment.

Long term transportation equipment elements emphasized in the 1970s are as follows:

• Program alignment by claimant command

• Replacement equipment acquisition programming

• Operations and maintenance cost management

• Weight handling equipment maintenance

The complexities involved in planning and implementing Navy-wide transportation equipment support, including fleet support, grow at a relentless pace. An in-depth examination of responsibilities in 1970 indicated a basic mission to provide for adequate and effective motor transport service and engineering equipment support.

The examination of how most effectively and efficiently to accomplish this mission resulted in the complete realignment of the NAVFAC-managed Navy transportation equipment program from a geographic to a command (claimant) basis in July 1973. Almost three years of planning, reorganizing and program rewriting preceded the realignment.

NAVFAC's decision on the type of alignment was influenced by two considerations: how most effectively to interface with the unilinear Navy, including providing highly responsive fleet support; and how to retain a hard core cadre of technical and engineering personnel in an organization rapidly being decimated by personnel reductions and retirements.

Realignment was preceded by several related changes. In a consolidation move, all data processing for transportation equipment requirements and procurement budget data was transferred to CBC Port Hueneme on July 1, 1971. Concurrently, as a cost reduction measure, Secretary of the Navy directed the integration of the separate transportation equipment reporting systems with the Navy's in-use capital asset reporting system (plant account).

Studies of the transportation realignment indicated it was not possible effectively to separate allowances from the transportation technical support functions. Moreover, to be effective, allowances and transportation equipment program controls must be exercised by the Chief of Naval Operations (CNO) through the claimant command channel to the using activity.

Clearly indicated was the need to provide staff technical assistance to claimants within this chain and close to their headquarters. In response to this requirement, special technical service organizations,

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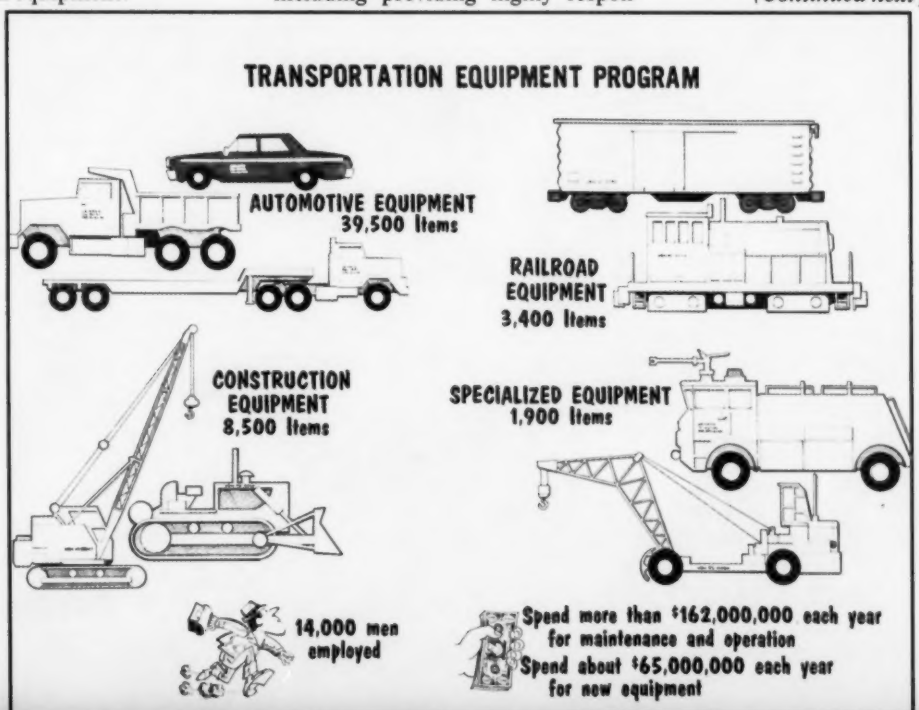


EXPENSE — Replacement costs for transportation equipment is high. What finally started the recent flow of new equipment to the fleet was realization that maintaining older equipment was even more expensive!

CRANES — Maintenance and certification of the Navy's heavy lift equipment has high priority, particularly where the equipment is used for handling nuclear materials.

designated as Transportation Equipment Management Centers (TEMCs), were formed in Engineering Field Division offices at Norfolk, Pearl Harbor, Washington, DC (Chesapeake) and Pensacola.

All are contiguous to claimants except for CINCUSNAVEUR (London) and COMNAVRES (New Orleans), which are served on a remote basis by the Norfolk and Pensacola offices, respectively. Resident technical assistance to activities in the 11th, 12th and 13th Naval Districts is provided by a WESTNAVFAC (San Bruno, Calif.) transportation organization working in conjunction with the TEMCs.

Acquisition programming for transportation equipment (planning, budgeting, equipment application and assignment) is of critical program importance since these actions affect the transportation support tempo for all activities ashore and afloat. Procurement funding for replacement and initial issue of transportation equipment is budgeted as Civil Engineering Support Equipment (CESE) under the appropriation, Other Procurement, Navy, administered by NAVFAC. Program sponsorship is assigned to CNO.

A cyclic problem with the replacement procurement funding of transportation equipment has existed since World War II. Immediately following phasedown from each war or conflict, replacement procurement is virtually eliminated in cutbacks from the war level and funding is diverted to other programs that appear more pressing. This situation occurred again in FY69 with our withdrawal from Viet Nam. The suppression of funding continued for four years until the condition of the transportation equipment had deteriorated from lack of replacements to the point that military missions began to be adversely affected.

With the strong backing of claimant commands, the procurement trend was gradually reversed and funding was increased from $7.7 million in FY72 to $63.5 million in FY77. Remedial replacement procurement was not approved in time, however, to avert large increases in maintenance expenditures caused major repairs resulting from breakdowns.

Although the FY78 and out years projected funding represents a marked improvement over the past, it is considerably less than needed to correct the deficiency.

While a large one time funding infusion might seem desirable, the budget concept established by CNO was to build a steady program that could be maintained. To this end, CNO approved the first increment of a level funding concept in FY76 that would reduce the overage and worn-out vehicles to approximately 15 percent by the end of one equipment life cycle or about 10 years.

However, congressional reductions in FY76 and funding competition within the Navy delayed the program. Transportation equipment must compete with other urgent Navy procurement requirements. Although the funding situation is steadily improving, the effect of constraints has been to extend equipment life cycles well beyond economic life expectancies and as a result, to ensure heavy repair costs.

Recent emphasis in the Navy transportation operations and main-

tenance area has been to reduce reporting and paperwork. This follows the trend throughout the federal government to reduce the scope of motor vehicle reporting by elimination of the Standard Form 80 (Report of Motor Vehicle Data) and simplification of the Standard Form 82 (Agency Report of Motor Vehicle Data. There remains, however, a continuing federal government requirement for each agency to submit annually, motor vehicle inventory and cost data on a revised Standard Form 82 and the new Standard Form 82D (Agency Report of Sedan Data).

Navy action implementing the reduced reporting was taken by the Comptroller of the Navy (NAVCOMPT) discontinuation of the NAVCOMPT 2122 (Transportation Operations and Maintenance Cost Report) effective June 30, 1975. Reporting data is now obtained from the NAVCOMPT 2168 (Operating Budget Expense Report) or similar reporting for revolving fund operations, This data is used to prepare a reduced scope Transportation Cost Report (NAVCOMPT Manual 37160).

The reduction in paperwork has been accompanied by sharp reductions in staffing and in travel constraints within EFDs. These reductions in turn have made necessary elimination of some detailed transportation technical assistance visits to field activities. With the improved replacement program now under way, however, renewed assistance attention will be given to the transportation maintenance management area.

One of the major objectives will be reducing maintenance manpower input as new vehicles come into the fleet. Composition of the general purpose vehicle fleet continues to be oriented to the standard commercial automotive industry product. Mobile engineering equipment purchases are likewise commerical production of a size and configuration necessary for maintenance of base facilities instead of the high capacity units associated with prime construction.

There is an increasing concern about weight handling equipment (crane) safety in both the commercial and government sectors. The U.S. Department of Labor, by the authority of the Occupational Safety and Health Act (OSHA), has established standards for crane safety and maintenance in commercial operations and is conducting inspections on compliance. Crane operation is critical as it is a prime factor in serious and costly accidents.

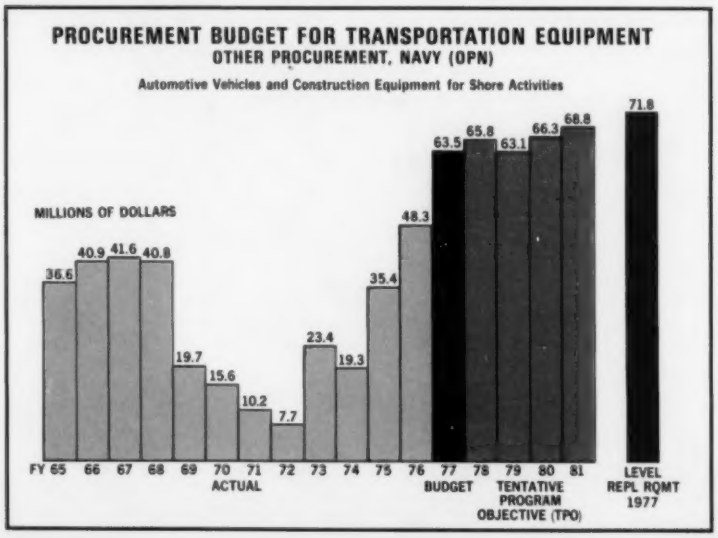
As a result, there is increased emphasis on maintenance for all types of cranes used in shore and fleet support and particularly at shipyards, public works centers and ordinance facilities. Policy and procedures for the Navy's crane maintenance program are prescribed in NAVFAC P-300 (Management of Transportation Equipment). A summary of key crane inspection and maintenance responsibilities are as follows:

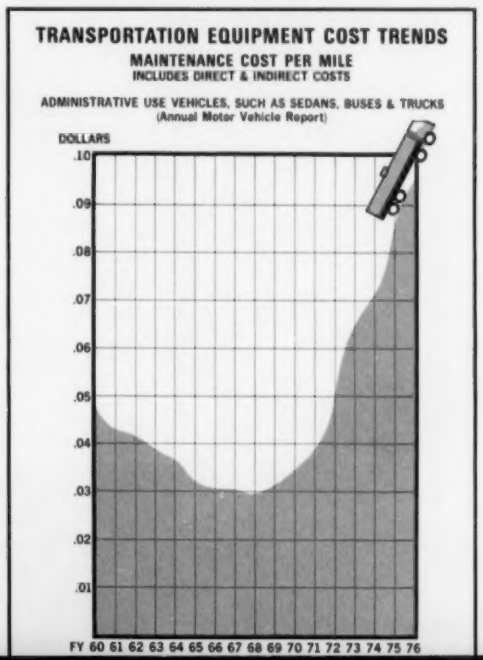
- Each Navy activity with a crane inventory is responsible for carrying out periodic maintenance inspections and annually to condition inspect, load test and issue certification thereof with appropriate documentation filed in the Equipment History Record file. In addition, a selective inspection and load or proof test is to be made after adjustment, repair or replacement or alteration-modification of any load bearing or load controlling part or component or safety device.

- EFDs conduct annual audits of the maintenance management of cranes at all shipyards. The audit includes a condition inspection and load test of 10 percent (random sample) of inventory to confirm validity of the program.

- EFDs annually validate shipyard (and Mechanicsburg) crane maintenance certifications for all cranes in special purpose (nuclear) service. If the certification cannot be validated the EFD directs the crane be removed from service until necessary repairs or adjustments are completed.

- NAVFAC monitors on-site the EFD annual audit of shipyard cranes in special purpose service (nuclear). EFD does not audit the activity execution of the crane program at activities, other than shipyards. Consistent with limited resources and travel constraints, EFD review of the crane program is in conjunction with scheduled activity transportation equipment visits and in response to specific requests for assistance.





NEPSS...toward a cleaner environment

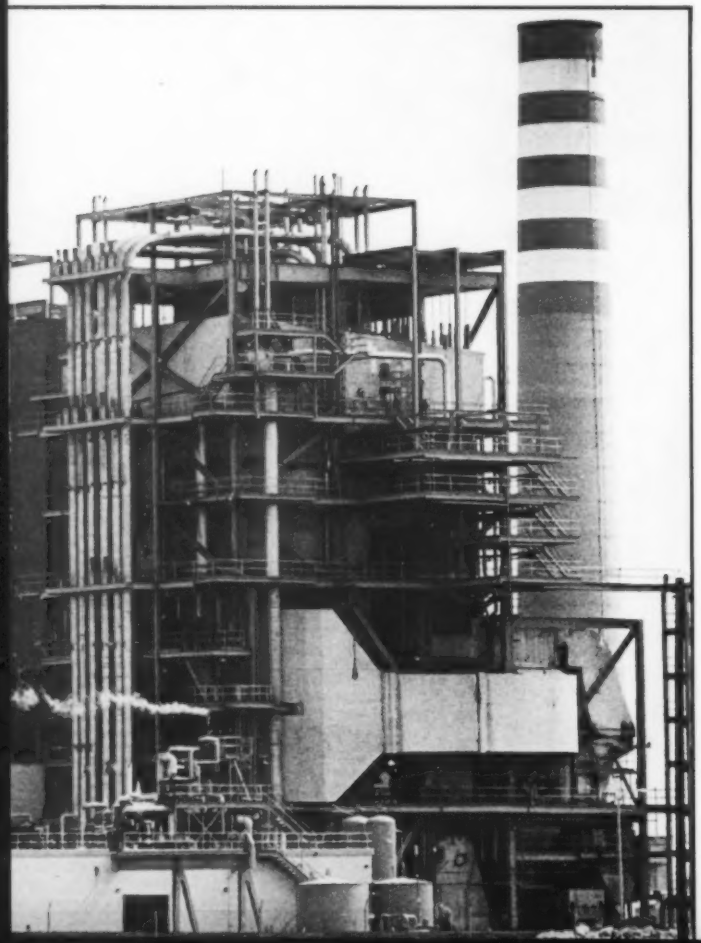
By CDR B. F. MONTOYA, CEC, USN
PE, Ga.
and
LCDR JOHN A. LUCAS, JR., CEC, USN
EIT, Penn.

• Port Hueneme, Calif.

The Navy manages a sizeable environmental protection program (some $200 million annually) to comply with all applicable laws. Program objectives are to: identify and quantify pollutant discharges from naval ships, aircraft, and shore facilities; control pollutant emissions from existing facilities; design and construct new facilities to meet pollution control regulations; cooperate with federal, state, and local agencies to prevent pollution; and assist naval commands with information and data reporting requirements.

A glance at the records will show the Navy commitment in support of the nation's efforts toward a cleaner environment. More important, the Navy has developed a cost effective ability to satisfy constant demands to protect and clean up the environment.

NEPSS (Naval Environmental Protection Support Service) provides environmental information and services in support of the fleet's mission. This technical support service is managed by NAVFAC Code 10 through NESO (Navy Environmental Support Office) at Port Hueneme, Calif. NEPSS is tasked to identify and quantify the extent to which Navy operations affect the environment.



Under broad CNO/CNM charters, RESOs (Regional Environmental Support Offices) at the NAVFAC EFDs, and NEPSS special support offices for aircraft, ships, and ordinance are coordinated by the NESO to achieve compliance with applicable federal, state, and local environmental laws and regulations; and thus be more responsive to the fleet's mission requirements.

Through the NEPSS, cognizant commands are constantly alerted to the impact of new and more stringent environmental laws and regulations on day-to-day and long-range fleet operations. Further, NEPSS specialty teams characterize the specific pollutant emissions from ships, aircraft, and supporting shore facilities.

Through such environmental and legal information gathering processes, Navy planners receive criteria needed to develop or update pollution abatement projects to ensure legal compliance of existing and new facilities.

The Navy Pollution Control Report is a compilation of all pollution abatement projects and their funding status, as identified by Navy and Marine Corps shore activities and major claimants with assistance from the NEPSS, EFDs, and NAVFAC. NESO reviews these pro-NEPSS, EFDs, and NAVFAC. NESO reviews these projects for legal requirements and technical accuracy; and produces monthly updates and semi-annual reports submitted to CNO for approval and subsequent transmittal to SECNAV/DOD and Congress for funding.

NEPSS has developed Navy programs for assessing generation, collection, segregation and disposal procedures for solid and hazardous wastes, with specific consideration for ship generated wastes. NEPSS engineers and scientists also conducted baseline environmental studies of Navy harbors at Pearl Harbor and Guam to identify and quantify existing pollution conditions before initiating wastewater monitoring programs.

Subsequent source emissions tests were conducted at these activities.

Other significant special studies conducted by NEPSS

POLLUTION — Pollution generated by Navy facilities is getting more and more attention as a welter of local, state, and federal statutes attempt to outline what should be done to clean up the environment. The details of cleaning up Navy pollution is NAVFAC's responsibility.

personnel at fleet support activities include providing environmental data for use in preparation of an Environmental Impact Statement for the Trident support facility at Keyport, Washington; determining the source of mercury which was killing oysters in receiving waters at the same site; aircraft noise study at Minang, Japan; generation, handling and disposal of shipboard hazardous wastes at New London, Connecticut; and disposal of waste ordnance products at McAlester, Oklahoma.

For the past three years, the highest priority and greatest demand for NEPSS assistance involved administration and implementation of the National Pollutant Discharge Elimination System (NPDES) permit requirements pursuant to the Clean Water Act.

The requirement means the Navy must identify, quantify, and monitor discharges, as well as provide a corrective schedule for 130 separate activities involving 850 discharge points. A centralized data management with regional participation has provided an annual cost saving of over $400,000. A substantial portion of this saving is obtained by producing complaince reports and management information reports directly by ADP with minimal manual manipulation.

Another significant cost saving is achieved through regional coordination/negotiation of NPDES permits with EPA by the NAVFAC EFDs. Through these complete negotiations and early pollution abatement actions, a total of 107 permits covering 173 discharge points have been cancelled, thereby avoiding the usual monitoring costs and associated management efforts. Savings in resources over the next five years should exceed $3 million.

Pollution abatement is an expensive program. Therefore, a well coordinated plan must be maintained to achieve cost effective results for the entire program. NEPSS provides this service and support to the Navy.

Managing Environmental Programs

By CHARLES A. RODGERS, JR.
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EIT, Ark.

• Alexandria, Va.

Because of the important role of major claimants in the planning, programming and budgeting cycle, major claimants are mainly responsible for an adequate environmental quality program. These words are probably familiar to most readers since they almost directly quote OPNAVINST 6240.3D. This instruction directs all levels of command to identify and start action to correct environmental deficiencies.

In locations where naval operations have been threatened by court action and adverse public relations, the commanders and public works officers are well aware that the "Buck Stops Here." Not only do federal laws apply, but on last count there were well over one thousand separate state and local mandates. Federal activities must comply with those that prevail in their area. Typically, a Navy activity does not have a trained staff to recognize discrepancies nor the engineering skills to plan actions to meet their obligations. This is where NAVFAC engineering field divisions assume great significance to the fleet.

NAVFAC has centralized management of several programs, such as civil engineering equipment, military construction, and transportation equipment. NAVFAC also plays a major role in validating, approving, and establishing priorities for projects requiring operations and maintenance funds; including procurement funds for pollution abatement. NAVFACINST 6240.3 details how activities may document and request these funds. In many cases this will require help from an EFD Environmental Engineer. Such field support is one of their major assigned responsibilities.

The next question is naturally, "How about problems we don't recognize at the local level?" Does the activity commander have to wait until a local representative (who is probably an expert) points it out in an embarrassing exchange? Not if our strategy works! The EFD conducts surveys of each activity to help station personnel recognize problems and establish programs to ensure complaince with environmental laws. This procedure is documented in NAVFACINST 5450.19B and if a friendly EFD visitor has not been around lately, that could be reason to complain. A recent Navy audit report (Z20076 of Jan. 31, 1977) recognized the value of these surveys with a recommendation that the survey procedure be fully implemented. NAVFAC concurred and management has placed priority on this support to the shore establishment.

Accordingly, a new Environmental Engineering Survey guide has been prepared and distributed. The guide is designed primarily for EFD engineers but copies are provided upon request and public works officers will find it useful as a checklist. The surveys cover almost all environmental and sanitary systems. These surveys result in a report directly back to the activity commanding officer, so these visitors are truly identified as friendly. As a followup to these reports, EFDs are expected to work with activity personnel in developing projects or changes as necessary.

Another important EFD function is to provide specialized engineering support on problems beyond local ability. A good example of this was a recent scare at a Naval Air Station. It appeared the drinking water might be contaminated with a toxic chemical. The EFD dispatched help and in a few days the matter was resolved by a carefully planned search. An isolated source of the chemical was identified and the much more serious problem of contaminated potable water supplies was disproven.

EFDs also provide qualified representatives for coordination with other government officials. These support functions range from a simple phone call up to many years of effort in defense of the fleet in court decisions. This expert representation was helpful in actions leading to (wastewater) discharge permits and air pollution consent agreements.

Pollution And The Navy

By DAVID L. OLSON
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PE, Va.

• Alexandria, Va.

"The solution to pollution is dilution." This phrase pretty well sums up the basic attitude of this country's cleanup efforts until a few years ago. Then, as population increased and we became more and more aware of the effects of pollutants upon mankind, our attitude shifted 180 degrees. In 1976 alone, this country spent $34.8 billion on pollution control — some $90 million a day.

There are now over 200 private organizations with specific environmental programs. And finally, there is a complex body of federal, state, and local environmental laws and regulations which govern all our daily lives.

The Navy, of all agencies within the federal government, probably has the greatest potential to affect the environment adversely. This results both from the scale and nature of its operation in carrying out its defense mission. Last year alone, the Navy spent nearly $250 million to correct pollution deficiencies ranging from multi-million dollar wastewater treatment plants to environmental sampling equipment costing less than $1,000.

Since 1966, NAVFAC has had Navy-wide responsibilities for shoreside environmental programs. Engineering Field Divisions (EFDs) have been staffed with professionals to assist activities in meeting their environmental responsibilities. The following items show the varied support EFDs provide:

- Routinely conduct environmental engineering surveys to identify deficiencies in wastewater treatment, potable water supply, air emission control, oil spill prevention control, and solid waste disposal; assist activity in preparing documentation for pollution abatement funding, when applicable, to correct these deficiencies.
- Assist activity commanding officer to meet his federal, state, and local environmental reporting requirements by collecting and assembling data in proper format for the environmental agency.
- Provide expertise within the traditional sanitary engineering functions for operations and maintenance of water-wastewater treatment plants and distribution systems.
- Manage the pollution abatement funds to insure that cost effective and compliance related projects are developed.
- Approximately $5-6 million of special projects (O&MN) are put "into the ground" each year.

The next decade will bring additional emphasis on solid waste management and the control of hazardous and toxic chemicals and wastes. Already EPA has issued guidelines which will require the federal government to take the lead in resource recovery. The Navy has several projects to use solid waste as an energy source. Reclamation of nonburnables will be a natural followup, if cost effective.

The Chief of Naval Operations, recognizing the importance of this shoreside pollution abatement program, has indicated continued support by programming approximately $80 million a year through FY80. This commitment by the Navy to keep its own environmental house in order is one yardstick of its commitment to protect the environment. The next few years are critical to laying the framework for environmental improvements that will affect our physical surroundings for decades to come.

CLEAN WATER — The Navy's potential for adversely affecting the environment is great. But the Navy also has in NAVFAC a wealth of talent for dealing with pollution. Clean water requires much effort and considerable expense.

Training Pollution Control Workers

By PAUL J. YAROSCHAK
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EIT, Pa.
• Alexandria, Va.

The Environmental Quality Division at NAVFAC Headquarters manages and directs the Navy's Environmental Quality Program as it relates to the operation and maintenance of the Naval Shore Establishment. Among its other duties, the Environmental Quality Division develops and administers various training programs to transfer skills and knowledge to military and civilian personnel who manage and operate environmental control equipment and facilities.

Large expenditures for facilities and equipment can be relatively ineffective without skilled operating personnel and knowledgeable managers.

NAVFAC administers and coordinates specific training courses with various other Navy commands to assure effectiveness and compatibility with other programs. Personnel training provides a vital link in the total environmental quality program which includes the identification of pollution problems, planning, funding, design, construction, and operation of pollution control facilities.

OIL SPILL CONTROL TRAINING

NAVFAC's centrally managed program to provide equipment to clean up oil spills and handle oily wastes from ships has been in existence for about five years. Equipment deliveries began about three years ago. The decision as to which personnel are assigned to operate and maintain this equipment has been left to the individual activities.

Therefore, there is now a mix of civilian and military personnel involved. Within the Navy, the established channels for training are geared to either military or civilian personnel, but not both. Consequently, oil pollution control training to date has been centrally managed by NAVFAC Headquarters.

However, a program to develop Personnel Qualification Standards (PQS) for oil spill cleanup and oily waste handling equipment is underway. It is hoped that the resulting PQS manuals will be used by civilian as well as military personnel for whom the PQS system was originally designed.

A description of available training aids and courses follows.

TRAINING AIDS

"Oil Spill Control for Inland Waters and Harbors", NAVFAC P-908 provides information relating to Navy-caused oil spills. It covers laws, regulations, policy and procedures for prevention of oil spills as well as information on containment, removal, and disposal of spilled oil. The manual is divided into three chapters.

Chapter one describes oil spill behavior and effects; highlighting the nature and extent of Navy-related spills. Chapter two covers public laws, Navy regulations and policy, contingency planning, responsibilities of Navy activities and commands, personnel training, and personnel safety.

Chapters one and two provide the "big picture" to higher echelon personnel. Chapter three presents detailed information on oil spill prevention, control, and cleanup. It is aimed at the working level personnel who operate the oil spill cleanup equipment. The manual has been distributed to all cognizant commands and activities.

Two films have been produced by NAVFAC for information and training in oil spill cleanup. Navy Motion Picture No. MN-11474, *"Cleanup — Some Basic Tools for Oil Spill Cleanup in Navy Harbors,"* is intended for use as an introductory training film for men newly assigned to oil spill cleanup crews. It is directed towards spills that occur in protected or semi-protected harbors.

Oil spill cleanup equipment (fire hoses, piston film, sorbents, booms, and skimmers) is shown and principles of operation and methods of use are demonstrated. The film has been distributed by the Naval Photographic Center to 140 activities and commands.

Navy Motion Picture No. MN-11317B, *"Spill Recovery — Navy Techniques for Oil Spill Containment and Removal in Harbors,"* focuses on specific techniques for using the equipment

CHIPS AHOY — Cleaning oil spills — as with the sorbent chip spreader — takes skilled workers. Training pollution control workers takes time, but a couple of speed-up training aids are available.

procured by NAVFAC. Techniques for handling eight different oil spill situations are shown. The film is designed to train the oil spill cleanup crew. The film has been distributed by the Naval Photographic Center to 140 activities and commands.

TRAINING COURSES

NAVFAC has included equipment operator training as an integral part of several oil spill equipment procurement contracts. As a contractual requirement, the manufacturer is tasked with training Navy personnel, both military and civilian, in proper use and maintenance of equipment. Training courses are held at the factory before equipment delivery, as well as at Navy activities after it is delivered.

In the latter case, the manufacturer's representative arrives with the equipment to inspect for shipment damage, assists uncrating and setting up, checks for proper operation, and conduct "hands-on" training in operation and maintenance. Training has been provided for large and medium sized oil skimming systems, waste oil rafts (donuts), donut servicing subsystems, and ships' waste offload barges (SWOBs).

Oil pollution control training session are intended for managerial and operational personnel with oil spill cleanup and ship oily waste handling responsibilities. The goals of the sessions are to review applicable laws, regulations, and Navy policy; to discuss operational requirements; and to transfer technology available in the Navy for oil spill cleanup and oil waste handling.

Training sessions include "hands-on" equipment training and provide a forum for exchange of information between activity personnel. The first training session was held in October 1974 at Boston, Mass.; the second in March 1977 at San Diego, Calif. and the third in May 1977 at Norfolk, Va. Additional sessions will be held in the future on an as-needed basis.

OPERATOR TRAINING

NAVFAC and the NAVFAC Technical Training Center (NTTC) at Norfolk, Va., provide centrally managed training programs for potable water, domestic and industrial wastewater, and sanitary landfill facility operators. Goals of these programs are to increase proficiency and professional growth of operators, assure operating personnel understand regulatory requirements, and reduce O&M costs. NTTC offers many basic and advanced correspondence courses ranging from Basic Arithmetic to Basic and Intermediate Water and Sewage. Details can be found in NTTC Training Bulletin 76/5 of May 21, 1976.

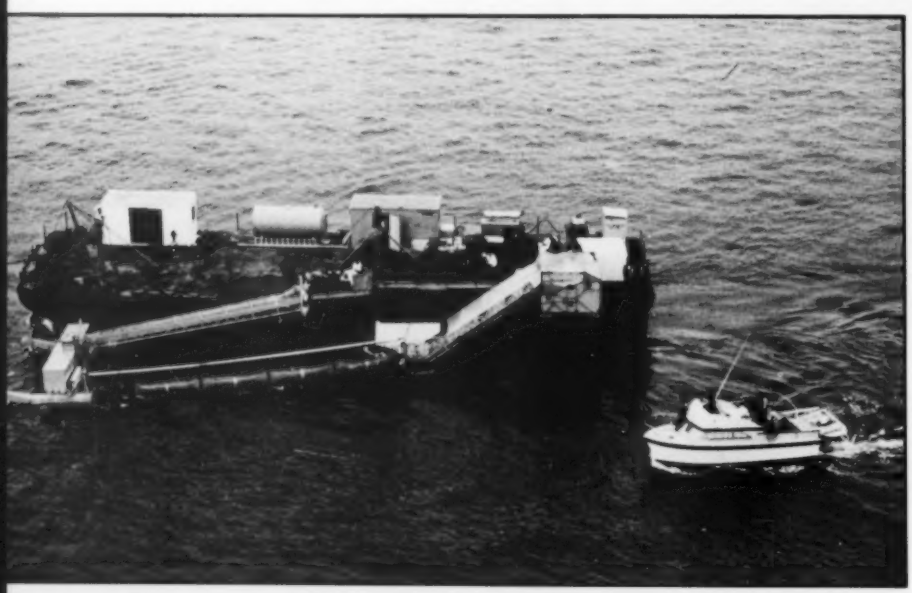
Many regional courses are held on-site at naval water, wastewater and sanitary landfill facilities. These courses are conducted by professional instructors from the Water and Wastewater Technical Training School in Neosho, Missouri and are geared for compatibility with specific Navy plants. Many courses end with an examination for certification by the Texas State Board of Certification. This examination offers the greatest reciprocity among the states. Details and locations of courses can be found in NTTC Training Bulletin 77/1 of Oct. 1, 1976.

ENVIRONMENTAL COURSES

A CECOS Environmental Protection Course is open to Navy officers and civilian personnel with responsibilities in environmental protection. The four day course is normally held at the Civil Engineer Corps Officers School in Port Hueneme, Calif. and includes such topics as Oil Spill Cleanup and Control, Environmental Legislation, Coastal Zone Management, Solid Waste Management and Environmental Impact Assessments/ Statements.

The Recovery and Re-use of Refuse Resources (R4) Decision Guide provides guidance for uniform activity surveys of solid waste management systems and outlines means by which activities can evaluate alternatives. The guide is issued by the Navy Environmental Support Office (NESO) in Port Hueneme, Calif. and is updated as dictated by field usage and feedback.

The Military Solid Waste Management Manual (Tri-Service) is a guide for the gathering, storage, collection, transfer, and disposal of solid wastes. Emphasis of the manual is on management of municipal-type solid wastes normally generated by family and military personnel support and industrial activities. The final draft of the manual is being reviewed by the three services. The manual will be issued to field activities in FY77.



TRAINING — CECOS, among other Navy schools, offers courses to familiarize people with pollution control responsibilities with state-of-the-art developments. The CEL-developed oil spill cleanup device is an example.

Managing Public Works Centers

By P. A. SULLIVAN
PWC Systems Branch
NAVFAC HQ

• Alexandria, Va.

Public Works Centers (PWCs) are big business in today's Navy. During FY76, the eight Navy Industrial Fund (NIF) Public Works Centers accomplished $347 million workload. This represents 33% of the total public works effort with 12,774 civilian personnel or 60% of the total Naval Facilities Engineering Command (NAVFAC) employees.

Navy industrially funded Public Works Centers are operated like a commercial business. Each PWC has a working capital fund called a "corpus" which pays for material, labor, equipment operations, and other expenses for work ordered by Navy customers. The customer is billed for the work accomplished and the fund replenished.

At PWCs, work input is controlled by the customers. Customer work must be completed by a specific time at an established price or price range. This process for PWCs differs considerably from the public works department (PWD) situation where workload is regulated by the maintenance control division. PWD workload is restricted to that level that can be realistically accomplished by the maintenance work force.

Despite the significant difference in work flow, the control system at PWCs for work management is an evolutionary development of the maintenance management system that was established in the late 1950s for the PWDs. New maintenance requirements have also evolved during this period.

The current plant value of naval facilities has increased over the years as a result of new assets created by construction or acquisition programs. However, the backlog of maintenance and repair (BMAR) for Navy facilities has increased disproportionately because of the deteriorating condition of overage and minimal maintained facilities. Also, increased workload in the PWCs resulting from the Vietnam war and the shore establishment realignment (SER) program placed new pressures on the maintenance management systems. It became increasingly difficult to provide efficient and effective service to customers.

Standardization of real property maintenance activity (RPMA) operations is a continuing NAVFAC program. The limited maintenance dollar resources available can best be used by the PWCs through the design of standard organizations, procedures and systems incorporating modern industrial engineering concepts that can be applied to all centers. In 1965, a standard PWC organization was first introduced. Installation of the mechanized Public Works Center Management System (PWCMS) was then initiated in 1968. A PWC corporate management program followed in 1969. Under the corporate management philosophy, the centers operate, so to speak, as divisions of a single organization.

The need for an effective and efficient system for PWC work management was voiced by commanding officers at the March 1973 corporate management workshop. PWC customers were expecting more responsive and predictable service at a lower cost. The assistant commander for operations and maintenance was then asked to study the problems and develop recommendations to manage work from the initial request to physical completion and billing. An initial study proposal was developed by a team from NAVFAC's public works division and approved by the PWC commanding officers in May 1973. In the following summer, the production management system (PMS) at each PWC was studied and results presented during the September 1973 corporate management workshop. A decision was then made to develop the new concept into an operating pilot system with the PWC San Diego selected as the test location.

Development and installation of the pilot system was completed in May 1975 and was designated as PMS Phase II based on the use of modern production management concepts and techniques. PMS Phase I was established as a preparatory step at all other PWCs. Each center has a Phase I plan to make improvements in the management of emergency/service, minor, specific, and recurring work By acting now, the PWCs will realize immediate benefits from recognized improvements. The transition to PMS II from the existing multiple system situation will be more gradual.

The PMS Phase II organization is designed to provide clearly defined functional responsibility and controls for accomplishing the work flow. The existing PWC organization separates responsibility for work into two groups: planning and operations.

The planning officer is responsible for completion of the job plan with the operations officer responsible for material procurement and work accomplishment.

In the new PWC organization, a single group — production — has responsibility for all phases of the work. Work control, shoploading, and scheduling of all maintenance and utilities work through engineering, planning and estimating, and work accomplishment is centralized in a production control office.

The service department has total responsibility for preparing work plans for shop accomplishment. Divisions of the service department are customer services, which screens and scopes all incoming jobs and writes minor jobs; production engineering; planning and estimating; and material.

Production engineering performs the work required in support of job orders. Other engineering work is accomplished by facility engineering, which is part of the planning office.

Work requests entering PMS move through a multi-step estimating process. The first step is accomplished in the customer services division where work requests are reviewed for approximate scope and cost of work required. Customer services also determines whether the work should be done by contract or PWC forces and if engineering is required. A scoping

estimate is sent to the customer if reimbursable engineering is required, if the cost of work exceeds the command approval authority, or if the customer is price shopping. A scoping estimate is a rough estimate to provide a basis for the customer to determine whether or not the job would be funded when funds become available.

Planning and estimating prepares more detailed fundable estimates for acceptance of customer funds. The scope of work to be performed for the customer is clearly defined at this point, and a line item, unit price labor and material estimate is prepared. Fundable estimates provide a uniform method of documenting project orders and should be accurate enough to be offered at a fixed price.

After funding, a detailed task level job plan is developed from the fundable estimate. The plan includes task specifications which provide a description of the work to be performed, the required manpower, material and equipment. A task sequence sheet is developed showing the work days relative to the start of the job on which each task should be accomplished.

Jobs are initially loaded into a mechanized backlog file when they are funded. These "projected" jobs are loaded to satisfy customer completion dates and/or shop capability. The jobs are then scheduled through production engineering and planning and estimating to allow sufficient time to procure material and accomplish the work during the programmed time period. When the job plan is completed, it replaces the projected job in the backlog file.

Shoploading is a continuous process under PMS Phase II. There is a single backlog file that contains all funded work. Workload is balanced against long range manpower for each week. The next week is balanced against manpower for each day a schedule is issued that shows the work to be accomplished by each work center or trade on each task for each day of the week. As work is performed, the hours are reported at the task level on the daily time and labor (T&L) card, the backlog file is updated. Where the work accomplished is different than the work scheduled, an exception report is produced for follow-up. Task completions are also reported on the daily T&L card.

At present, the operation of the Phase II pilot is being closely monitored at PWC San Diego. Changes are being made to procedures and computer programs to correct system problems as they are identified. The other PWCs are proceeding to accomplish the improvements included in their Phase I plans.

PMS is a total system approach to work management for the PWC environment. The organization, workflow, manual procedures, and mechanized systems are integrated to provide an efficient and effective tool for managing PWC work.

DATA — One of the greatest boons to befall public works managers is data processing equipment. Keeping track of all the information necessary to administer a major Public Works Center would boggle a battalion of "pencil and paper" accountants. Modern data processing machines can even produce reports on the data they collect and store.

Fire Safety For NAVFAC

By R. E. RIGHTMER
Fire Marshal, NAVFAC

• Alexandria, Va.

The Fire Marshal program was established under the Naval District Commandants in 1946. Their mission was to inspect annually all Navy and Marine Corps fire departments in their district. The inspection was to assess the firefighting capability and fire prevention program at each activity.

The program was transferred to NAVFAC in 1971. District Fire Marshals became Area Fire Marshals assigned to the Engineering Field Divisions. The mission remained the same with an additional function of inspecting private shipyards doing contract work with the Navy.

Firefighting capability is measured by a number of factors. The fire department demonstrates its expertise in handling apparatus and equipment, its ability to respond to emergency situations, and its operational pre-fire plan for all major installations on their activity.

Judging an activity's fire prevention program goes beyond inspecting fire extinguishers. As buildings and facilities become older and maintenance dollars continue to shrink, aggressive fire prevention must be practiced. Thorough inspection of facilities for fire hazards, coupled with a follow-up inspection to insure the hazard has been eliminated, is a must. Fire Marshals assist Fire Chiefs in establishing fire prevention programs that meet their activities' requirements.

Large loss fires (over $50,000), fires involving death or serious injury and suspected arson fires are investigated jointly by the Area Fire Marshal and a Fire Protection Engineer, as required by NAVMAT Instruction 11320.5. The investigation is to determine cause, point of origin, violation of regulation, design deficiency, evaluate firefighting procedures and provide recommendations to prevent similar fires.

The Area Fire Marshal is the fire suppression coordinator for his area. He monitors his 20 plus fire departments to insure they are capable of responding to any fire emergency on their activity.

FIRE — One of NAVFAC's lesser known responsibilities is fire safety for shore facilities. Area Fire Marshals assigned to Engineering Field Divisions are charged with assuring fire safety and with inspecting for fire hazards.

Project Managers & Management

By LT GERARD J. BARRETT, CEC, USN
P.E., Penn. and Guam
• Monterey, Calif.,

Project Management is a concept used in the Department of Defense for many years to manage major weapons system acquisition. It is similarly embraced by NAVFAC and can be seen working at EFDs, many OICCs, and, of course, Headquarters. The latter category, however, will not be discussed in the article.

Project Management is an all-encompassing concept, providing centralized management over the facilities acquisition process which includes financial, technical and related aspects of the combined design and construction programs. It places with the Project Manager (PM) a strong responsibility for the timely "tracking" of a project or program through the entire acquisition process.

Who is a Project Manager and how important is he?

The PM is the field's representative in the EFD or OICC. He may be an officer but, in most cases, is a civilian. He is responsible for scope and funding control and timely completion of all phases of a project and literally carries that project from design through construction contract completion and close-out — or from cradle to grave.

For the customer, he is the contact point at the EFD or OICC. He insures that everything specified in the project scope is received within the dollars indicated and that the facility is delivered as quickly and efficiently as possible. All questions concerning scope deviation, contract changes — or whatever — must be referred to the PM. If there is more than one project in a particular year, he can arrange to transfer funds from a project whose cost is under estimates to one in trouble. He knows the limits and guidelines to be followed. Close contact between him and the customer is a must!*He represents the single, major motive force for propelling the system through its evolution.*

PROJECT MANAGER'S PERSPECTIVE

It's rather difficult to outline a complete job description for a Project Manager. *A PM does or causes whatever is needed to be done to keep his projects moving.* He does whatever is most needed to meet his goals. In general, a PM is not a "doer" of any job; there are others charged with "doing." But a PM sees to it that what needs to be done is done so the OICC's or EFD's objectives are met.

His role implies reliance on others to do the work, but it also implies "controlling" and coordinating the work so no one aspect dominates others to the detriment of the whole.

The most important function of a Project Manager is getting people to communicate and cooperate with each other to understand the project and their place in the effort. All customers must insure communication is maintained with their assigned project manager.

A PM interacts with nearly the entire EFD/OICC team. He must coordinate with the engineer in charge (design manager), the construction representative, the contract specialist, etc., and he must be conversant in the "language" of each. Many times, he may deal directly with an A&E firm or a construction contractor in conjunction with his in-house counterpart.

PROJECT PLANNING

A PM starts the ball rolling with a new project as soon as he has headquarters' authorization and design planning funds available. He thinks out associated project costs, the design timetable, necessary meetings, etc. A PM is an advisor to the A/E State Selection Committees and is a member of the Selection Board if he is a registered professional engineer or architect. He arranges the pre-design conference and insures distribution of plans and specs later for customer review and the incorporation of appropriate comments. He serves as the catalyst throughout the entire process to insure everything happens when it should. He does that by working with others and by communicating.

What qualities should a PM have? What should be expected of him as an individual? In what areas of personal development should he direct his attention?

Project Managers generally are free to use their judgment. Other than the few procedures which have developed into standard operating practice, there is no success formula a Project Manager can adopt. He must decide for himself, within reason, what methods and techniques he will use. For a Project Manager to be responsible for planning, directing and controlling a program, he derives authority to get the job done directly from the Program Manager and, more directly, Head, Acquisition Dept. at an EFD.

A Project Manager is encouraged to adapt standard techniques to the requirements of his projects. In turn, he has a right to expect his immediate supervisors will exercise their own power of approval, that is, his plans and techniques will be accepted as satisfactory if they comply with basic policy directives. He's expected to know what he needs to know to do the job properly.

FUNCTIONAL SUPPORT

Judgment and flexibility are difficult to use in most structured environments. The most significant reason for this is the "operation" of program management envisions two organizational elements. In some instances, a program office is staffed with all or most of the *capability* to perform functional activities, i.e., preparation of scopes of work, government estimates, functional analysis, technical review and analysis. In these cases, the program officer is largely self-sufficient and does not rely on much support from functional activities outside the line authority of the Program Manager. Here, coordination is simplified, but problems of organizing and staffing the program office are magnified.

In an OICC or EFD, there is a centralized management authority consisting of the Program Manager and his staff of Project Managers. The program office is

served by functional organizations which support this central authority and are responsible to the OICC/EFD for assigned tasks in support of the program office. That environment, where the resources for doing the work (Design Division, Contracts Division, PWC, etc.) are largely outside the line authority of the Program Manager, are communication challenges.

The fact is there are usually several projects or tasks competing for the limited resources of the same functional entities. These functional elements are also supporting the normal activities of their parent organizations, i.e., other departments, PWC, etc. When personnel are not available or do not "rise to the occasion" to support all the demands, the Program Manager, and more directly the Project Manager, finds less responsiveness than he desires from the functional elements.

His situation is made even more difficult because, in most cases, the functional elements were there long before his projects started or even before he was and they plan to be there long after his projects are complete or he is gone.

Another aspect of this problem is the tendency of functional specialists to see their discipline as the core of a successful program. Their commitment to their specialty leads them to try to dictate to the PM what will or must be done, or even advising nothing rather than advising what should be done. One of the most difficult concepts to put across to functional specialists is that the Project Manager is responsible for determining what will be done. The functional specialist is responsible for how it is done.

The natural tendency for many managers is to promote standardization. Although good in some respects, the Project Manager should have the flexibility, when possible, to alter procedures for the benefit of the program. The Project Manager must be able to exert sufficient influence to force functional managers to take action when SOP becomes a critical bottleneck in achieving project milestones.

Functional managers should not be so inflexible they cannot adapt to novel situations. They should be open-minded and assist the Project Managers where neither has had similar experience.

Program management, therefore, places an extraordinary premium on talent for leadership as distinguished from command, on persuasion as distinguished from direction. The environment requires an emphasis on informal or indirect authority, or influence as distinct from direct authority.

A Project Manager must have great persuasive ability; he must have rapport with every project contact, and must have a reputation for resolving opposing viewpoints within his command and between external organizations.

Often, a Project Manager may have to work harder than his functional staff just to overcome their opposition or lack of action. A PM must be able to provide the facts, figures, and analysis to confront all opposition to keep his projects on the move. A Project Manager must have a strong analytical capability to coordinate a program where parts are disjointed. His key to success is his talent for analysis and his ability to work with people.

RESPONSIBILITY

In common with the way any manager operates, the Project Manager relies on others to do the work. But he cannot escape the responsibility for the result. If he is responsible, he must be satisfied that what is done in his program makes sense to him and is consistent with his plans. If he cannot be persuaded something is right for his program, he must arrange the necessary change. If no action is taken, look out!

The ultimate responsibility for projects rests with the Project Manager. He must have tight control of every aspect of his program until he is sure the functional staff is working well. Once he has that assurance, he should relax controls and allow his counterparts some of the same freedom he seeks for himself. The key to such a concession is maintenance of a clear-cut channel of communication. The PM must be kept informed of all actions, affecting his project, functionally, aesthetically, or financially.

KEEP SUPERIORS INFORMED

The Project Manager keeps key people informed of his project's progress. He should be attuned to the information needs of people who influence decisions on budget, scope and method of project accomplishment. Generally, this is his immediate boss who will then integrate problem areas into the big picture for further action.

A Project Manager will be aware of what is going on above him. He has to be aware of what is expected of him by higher authority. He should know the typical questions asked at major review points, i.e., design reviews, constructability reviews, etc.

A Project Manager's superiors must have confidence in his abilities since he draws his authority from those above him. The PM's rapport or confidence with his superiors often keeps his functional supporters cooperative. This confidence can be reaffirmed by demonstrating a complete knowledge of his assigned projects, i.e., milestones, costs, problem areas--in short, everything important about the program.

Project Manager's presentations at project review meetings should be complete, concise, and factual. They should highlight problem areas for top management and, when appropriate, action or guidance should be requested.

EFFECTIVENESS

To keep his projects moving through the system, a Project Manager must be effective. To be effective, he must know the right things to be done and in what order they should be done.

The Project Manager has little time he can control because briefing, reporting, presentations, etc., take so much of his time; but these are special occasions when he can create and maintain his image as an effective manager.

Just who is a Project Manager? Is he a super hero or somesuch? He's really a person like you or I who holds a key position in the acquisition process. We should know him well. We're all Project Managers to some extent and should take heed by emulating as many of his qualities as we can.

The Civil Engineer Corps In 1977

By CDR J. J. GAWARKIEWICZ III, CEC, USN
EIT, N.Y.
and
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The summer of '77 finds the U. S. Navy at a crossroads of national defense. U. S. supremacy at sea is actively challenged. On the homefront, new priorities are being established for energy conservation and environmental protection. At the same time budget cutbacks are forcing a closer look at hardware requirements and personnel policies throughout the Navy. Strength reductions, when the first impact of the all-volunteer concept is being felt, make personnel management more important than ever.

We are entering an era of less money and fewer people to handle a more complex and technologically advanced Navy. And the Civil Engineer Corps is adapting to these changes with increased emphasis on advanced management techniques.

For the first time in four years the CEC is manned at authorized strength — but, at the same time, we have fewer billets than at any time since between World War II and the Korean conflict.

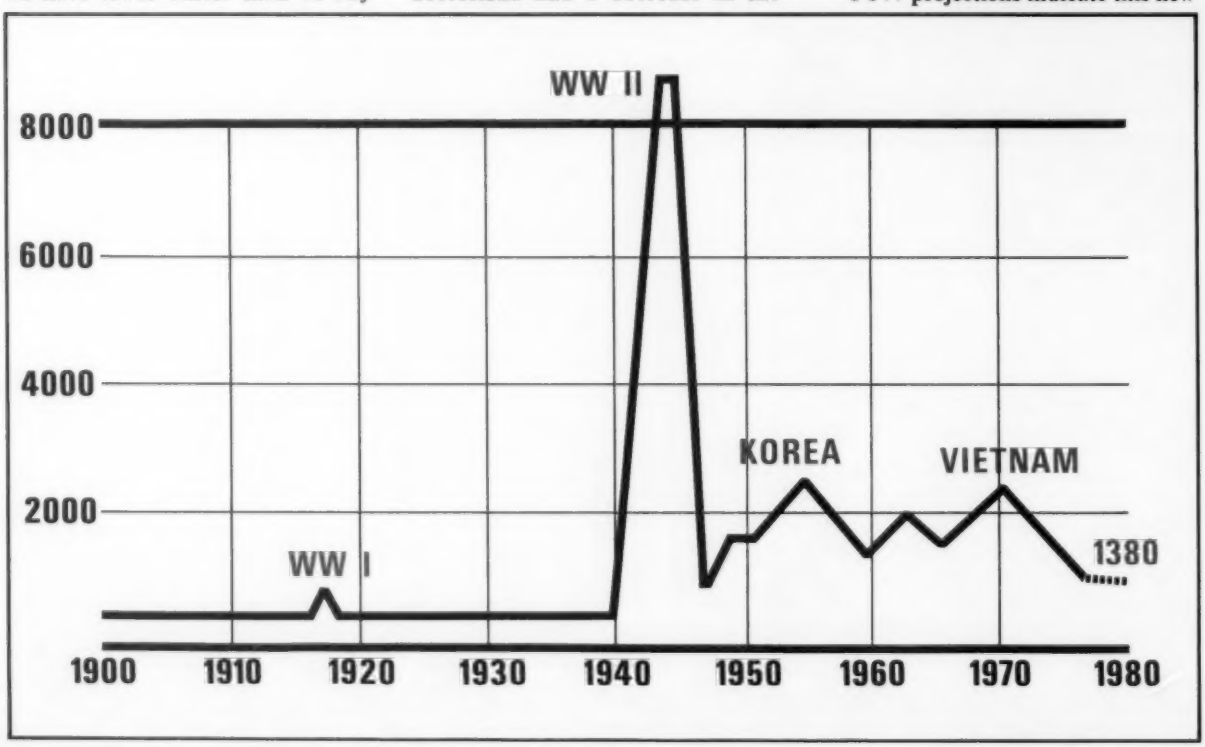
Continuing force reductions throughout the Navy (since withdrawal from Vietnam) have resulted in the number of authorized CEC billets dropping from 2,186 in FY69 to 1,390 at the end of FY77. This compares with 1,704 authorized billets in FY65 prior to the Vietnam buildup. Future projections, however, show authorized CEC billets leveling off in the 1,380 to 1,390 range, which should add some stability to the personnel picture.

CEC on-board manning, as a function of billets, is considerably improved in FY77. Recruiting difficulties, coupled with increased losses, resulted in shortages of 20 to 50 officers between 1973-1976. Billets went unfilled or had to be gapped for extended periods. In the summer of '77, however, our on-board strength meets or exceeds our authorized numbers. An increase in accessions and a decrease in the number of reserve officers requesting release from active duty have been the primary factors influencing our strength. An imbalance, however, in strength by grade will still cause some detailing problems requiring some billets to be filled by lower grade officers or gapped in order to meet grade requirements.

In a typical year, around 150 new officers are selected for the Civil Engineer Corps. Roughly 50% of our total accession quotas have traditionally been for OCS, however, in the past three years only 33% of our actual input has come from this source.

This cumulative shortage prompted the Chief of Naval Personnel to authorize a new Direct Appointment (Ensign) program to replace OCS as the primary accession source for new CEC officers. The new program allows the recruiter to commission a new accession before sending him or her to a six-week Officer Indoctrination School (in lieu of 19 weeks of OCS) at Newport.

FY77 projections indicate this new



program will successfully return our reserve officer input to 50% of our total accessions and, at the same time, make up our shortfall from prior years.

CEC INPUT

SOURCE	FY76 QUOTA	FY76 ACTUAL	FY77 QUOTA	FY77 PROJECTED
OCS	83	40	N/A	N/A
Dir. Appt. (ENS)	N/A	N/A	71	65
Dir. Appt. (LTJG)	8	5	7	7
NROTC (Regular)	26	26	26	26
NROTC (Contract)	3	3	3	1
USNA	5	5	5	5
Line Transfer	19	20	19	17
(LDO/ROC/NESEP/etc.)	10	8	8	9
	154	107	139	130

Accession of women into the CEC has also increased in FY77 with a marked rise in the number of women engineers expressing an interest in the Corps. Prior to this year, we had a total of six women officers, five of whom were architects. In FY77 most women applicants were civil engineers and we expect four to five women engineers to accept CEC commissions by the end of this year.

Of the three factors contributing to the dramatic swing from an under-strength to an over-strength posture in the summer of '77 (i.e., decrease in authorized billets, increase in accessions, and decrease in requests for release from active duty) the latter may be the most significant. Retention in the Civil Engineer Corps jumped from an average of 25% between FY73 — FY75, up to 38% in FY76. Although it is still too early to forecast accurately, it appears the advent of the all-volunteer concept in the Navy may be working to attract more career-oriented officers to our ranks.

An increase in the number of reserve accessions along with the apparent up-swing in retention will make augmentation more important than ever in the career planning of our reserve officers. The law limits the number of regular CEC officers to 3% of the unrestricted line, which equates to 1,050 USN officers.

During the Vietnam conflict, an Executive Order suspended that portion of the law which limited our regular strength and we were able to build up well above our ceiling. After Vietnam, the executive order was cancelled and the Civil Engineer Corps had to return to the 1,050 ceiling by attrition.

Accordingly, augmentations had to be severely curtailed with only a few token quotas granted to the CEC. Most officers selected to fill those quotas have had to wait in a "banked" status until their number comes up for appointment to the regular Navy.

The summer of '77 will find the last of the banked augmentees receiving their appointments with the future augmentation picture looking considerably brighter. Augmentation boards in FY78 (February and August) should each be able to select 10 — 12 CEC reserve officers in lieu of the three to four selected by each FY77 board.

The Vietnam era also had a dramatic effect on promotions in the Civil Engineer Corps. To support an increased number of officers in the Corps during the Vietnam buildup, we were able to obtain increased promotions to our senior grades. In the early seventies, shortages of senior officers to match our billet structure made continued justification of increased promotion opportunity to CAPT, CDR and LCDR possible. In late 1974, however, it became apparent post-Vietnam billet and strength cuts were disproportionally made in lower grades causing billet structures to become distorted.

Accordingly, CNO imposed a Navy-wide billet downgrading action in 1975 which resulted in a CEC billet structure which more closely approximated our on-board strength. Nevertheless, shortages of CEC captains have continued to be a problem and have resulted in continuation of increased promotion opportunity to 0-6 better to fill critical CEC captain billets. For FY78, however, budgetary constraints and outside pressures to reduce overall senior officer numbers resulted in a decision by the Chief of Naval Personnel to standardize promotion opportunity for all communities, line and staff.

(Continued on page 28)

CEC ON-BOARD MANNING
(PROJECTED 30 SEP 77)

	BILLETS	ON-BOARD	DIFFERENCE
FLAG	9	5	-4
CAPT	98	88	-10
CDR	205	223	+18
LCDR	320	309	-11
LT	349	382	+33
LTJG	236	157	-79
ENS	145	205	+60
WO	28	31	+3
TOTAL	1390	1400	+10

The FY78 standard promotion opportunity and eligibility in years of commissioned service are:

FY78 PROMOTION	OPPORTUNITY	ELIGIBILITY
CAPT	60%	21-22 Yrs.
CDR	70%	14-16 Yrs.
LCDR	85%	9-10 Yrs.
LT	95%	4 Yrs.
LTJG	All Qualified	2 Yrs.

The promotion opportunity percentage, when applied to the number of officers in the CEC promotion zone, will determine the number of officers that the selection boards may recommend for promotion. Of these, 5 to 15%, dependent upon the Secretary of the Navy's determination, may be selected from below the promotion zone.

The future promotion picture looks relatively stable. The flow point to commander may change to 14-15 years; however, flow points to the other grades are not projected to change in the next few years. Promotion opportunity will depend on vacancies in grade as well as other variable considerations; however, it is not expected to vary much from that shown for FY78.

The summer of '77 finds the Civil Engineer Corps deeply committed to an extensive and varied officer training program designed to assure that CEC officers possess the technical and professional skills needed to meet the challenges of today's Navy.

Postgraduate education, long one of the most significant educational opportunities available to CEC officers, continues to be the primary method for obtaining the technical expertise needed to build and maintain today's shore establishment. An average of 65 officers is placed in graduate school each year to fulfill this need. This level provides the opportunity for graduate school to all qualified career officers.

Billets requiring (and officers with) a masters level specialized education are "P-Coded." The number of P-Coded billets and the current inventory of P-Coded officers are then the driving factors in determining the number of postgraduate school quotas required each year to maintain a base of properly educated officers. To date, the number of technology and management P-Coded billets has supported a 75% technology and 25% management breakdown of PG school input. These proportions will vary each year as requirements dictate.

By the summer of '77, 70% of all CEC (510X) officers and over 80% of all career officers (i.e., senior to Year Group 72) will have either obtained a graduate degree or will be in postgraduate school.

Detailers consider utilization as as well as billet requirements in making assignments with a goal to assign a P-Coded officer to a utilization tour within two assignments after graduation and to attain a career utilization of at least two tours. Since P-Code utilization is only one of the many constraints considered by detailers in making assignments, it is not always possible to meet the utilization goals. In the summer of '77, however, roughly 83% of our P-Coded CEC officers are assigned to billets requiring their educational subspecialty.

The postgraduate education program is supplemented by numerous professional training programs including enroute/nonenroute training for junior officers, refresher courses for lieutenants and lieutenant commanders at CECOS, and service colleges for our more senior officers. As we enter the summer of '77, it is apparent that continuing education to keep current in state-of-the-art technological and managerial techniques is of paramount importance to the career development of each CEC officer. The Corps is acutely aware of this need and is making great progress in satisfying our requirements.

If the Civil Engineer Corps is to continue to be recognized as a professional organization, it is incumbent that each CEC officer strive to be a professional. The outward symbol of professionalism is registration, and it is important that all career officers become registered to maintain the professional stature of our Corps.

Additionally, engineering is reaching the point where professional registration will be required to practice actively and publicly. Even now, some of our CEC billets require the incumbent to be a registered professional engineer or architect.

As of the summer of '77, 65% of our active CEC officers were registered at the EIT level or better. Of these, 62% of our LCDRs and above are registered Professional Engineers or Registered Architects.

To aid officers seeking refresher training for PE examinations, the Chief of Naval Education and Training has authorized use of Tuition Assistance Funds. In view of the technical/occupational nature of engineering refresher courses, as opposed to graduate courses leading to a subspecialty, a waiver has been granted to enable us to use these funds to defray expenses of the refresher courses.

For architects who must gain experience on the drawing board under the supervision of a Registered Architect to fulfill experience requirements for registration, the Naval Facilities Engineering Command has initiated a new Intern-Architect Development Program. NAVFAC Instruction 1520.8 describes the program which allows architects to gain experience while in the Civil Engineer Corps which will be acceptable to state registration boards.

One question asked by CEC officers as they ponder their future is: "What job will be best for my career?"

Much to the amazement of the detailers, most officers seem to answer: "AROICC, San Diego!" or "Staff, London!"

There is really no single answer to a question regarding which billet is best. A job suited for one officer's career goals may not be right for another.

Most CEC billets are in one of four basic areas; Public Works (Facilities Maintenance), Contract Administration (Facilities Acquisition), Seabees (Construction Battalion Operations), or Staff (Planning and Other Functions). Senior CEC officers are more "assignable" if they have experience in all four categories. Accordingly, it is desirable for a CEC officer to have served in each of the basic areas, or at least in Public Works, Contracts and

Seabees, by the time he is eligible for promotion to commander (about 15 years). Once an officer has experience in the different types of duty, his career pattern becomes one of service where needed — the best man for the job.

No specific billet is considered "career enhancing." Outstanding performance in any billet is the best way to further one's career. There are several points in a career, however, when an officer must make a choice regarding what path to follow; i.e., which assignments should be requested and what training is needed to reach chosen goals. Career planning requires an intelligent blending of the individual's past experience and educational background along with his personal aspirations, goals and desires resulting in a decision which, at the career point in question, is the best type of assignment to satisfy both the needs of the Navy and the individual.

The needs of the Navy, its budgetary and personnel constraints, billets to be filled, and mission oriented function are the very important considerations in career development. Each officer must realize that career decisions cannot be weighted too heavily in favor of individual desires. The officer who succeeds in matching personal interests with Navy needs will be the officer most likely to feel complete job satisfaction.

The Chief of Civil Engineers is currently preparing a CEC Career Planning Guide which will be distributed to all CEC officers for their personal use. It will offer information and guidance which should enable each officer to become more intimately familiar with his own career development.

While the Chief of Naval Personnel is responsible for officer planning and assignment, the Chief of Civil Engineers plays an extremely important role in CEC officer planning, development and assignment through his responsibility as Principal Advisor and Sponsor for CEC officers. The Head of the CEC Detail/Placement Branch, assigned to BUPERS with additional duty to the Naval Facilities Engineering Command, serves as the point through which personnel policies are implemented, officers are assigned, and billets are filled.

PROFESSIONAL REGISTRATION
PE/RA/EIT

	BY GRADE	CUMULATIVE
FLAG	100%	100%
CAPT	84%	85%
CDR	85%	85%
LCDR	76%	80%
LT	61%	73%
LTJG	54%	71%
ENS	31%	65%

Each assignment tries to match the officer's qualifications, the billet requirements, and the officer's personal desires. In the summer of '77, however, this "triad of detailing" has expanded into a polygon of innumerable sides. Detailers have myriad constraints to consider with each assignment.

As always, dollars play an important role. BUPERS controls the funds for personnel moves and the detailers constantly have to adjust to the fluctuating availability of funds.

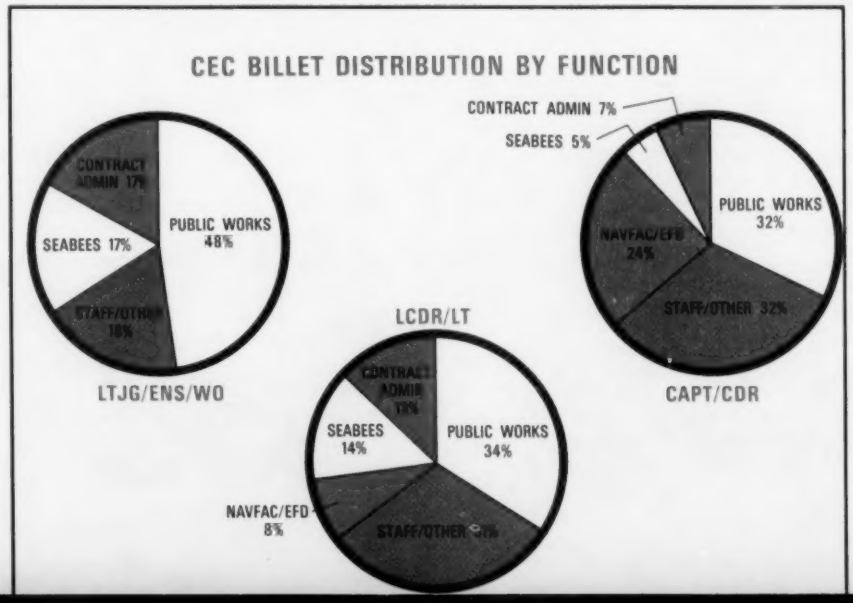
Billet structure is another variable factor. Changes, downgrades, additions and deletions are daily occurrences which mean adjustments in detailer planning.

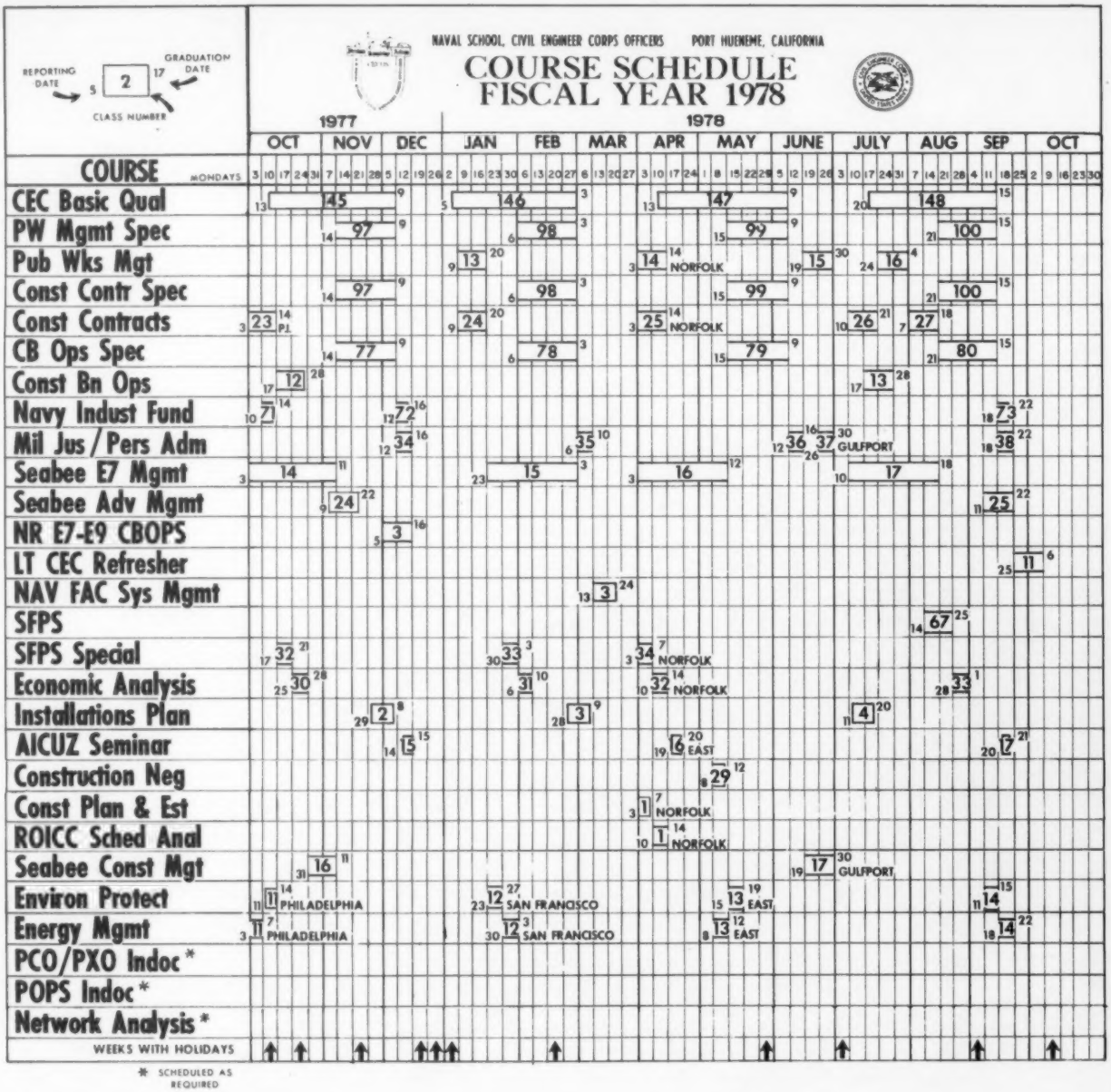
Personal considerations involving individual officers and their families are an important part of the detailing process. Some overseas locations restrict the number of dependents allowed and some officers have family members with health problems requiring special attention.

Timing is another factor which must be considered in each move. Not only are detailers concerned with providing turnover time at each billet (along with travel, leave and training enroute), but he must also live within varied DoD prescribed tour lengths for different grades of officers at different locations.

As part of the Congressional and Department of Defense efforts to cut costs, the tour length policies for all the services are receiving close scrutiny and may be changed in the immediate future; however, the standard tour lengths being

(continued on page 37)





New At CECOS

The Navy's current need for modernization of its shore facilities to support new missions and remain conscious of demanding environmental and energy requirements can result in complex planning problems.

Particularly now, as never before, Navy installations and surrounding communities must develop joint planning methods that can and should be mutually advantageous.

CECOS has introduced a new course that includes the major requisites for confronting the problems of Navy shore development in the '70s and '80s. These objectives are master planning, real estate and community interface.

The first class, which was introduced 12 July, will be repeated 29 November — 8 December 1977; 29 February — 9 March 1978; and 11-20 July 1978.

Aside from CECOS faculty members, instructors and guest speakers include representatives of local governments, naval activities, Headquarters, Naval Facilities Engineering Command and NAVFAC Engineering Field Divisions.

Persons interested in attending this course and/or others listed above are invited to direct their inquiries to Commanding Officer, Naval School, Civil Engineer Corps Officers, Code C20, Port Hueneme, CA 93043; Autovon 360-5655; Commercial (805) 982-5655.

"...the Naval Facilities Engineering Command is in good hands!"

Remarks by
Admiral James L. Holloway III
Chief of Naval Operations
at the
Naval Facilities Engineering Command
Change of Command
Washington, D.C.
27 May 1977

Admiral Marschall, Admiral Iselin, Distinguished Guests, Ladies and Gentlemen.

It is a great pleasure for me to be here with you today and to participate in this change of command. It is particularly good to see the former chiefs of the Civil Engineers here, especially Admiral Ben Moreell, who was so instrumental in the founding of the famed Seabees.

I am especially gratified to be able to take part in the Civil Engineer Corps change of command, because it provides me with an opportunity to remind you, and to tell the rest of the world, the unique but vitally essential functions of the Seabees.

I think people tend to focus on those areas of naval activity which relate primarily to our efforts for maintaining our naval forces in a state of readiness for war — building ships, procuring aircraft and developing weapons, and training and deploying our combat forces.

But while all this preparation is taking place, personnel of the Naval Facilities Engineering Command, the Civil Engineer Corps and the Seabees are producing in peacetime. From Keflavik to the Pacific Trust Territory, from Antarctica to Bethesda, from Bangor to Diego Garcia, they are building roads, piers, housing, barracks, airfields, recreational facilities and countless other things that enable us all to do our jobs better or to live fuller, more satisfying lives.

It doesn't take a war for us to realize the value of our engineering experts. They are tremendously competent in their fields — real professionals — and those of us in leadership positions understand and appreciate their impressive contributions to a better, more capable and ready Navy.

We are here today to witness the passing from one officer to another, command of this marvelously productive organization. To me, a change of command is one of the most important of Navy ceremonies. Command, the responsibility and accountability it involves, is the cornerstone of our ability to meet our obligations in defense of the United States.

In this ceremony today, we recognize two distinguished officers who have held numerous commands, and know full well the burden our Navy places on a man in giving him command. Both Admiral Marschall and Admiral Iselin have responded to the Navy's charge by providing effective, professional leadership.

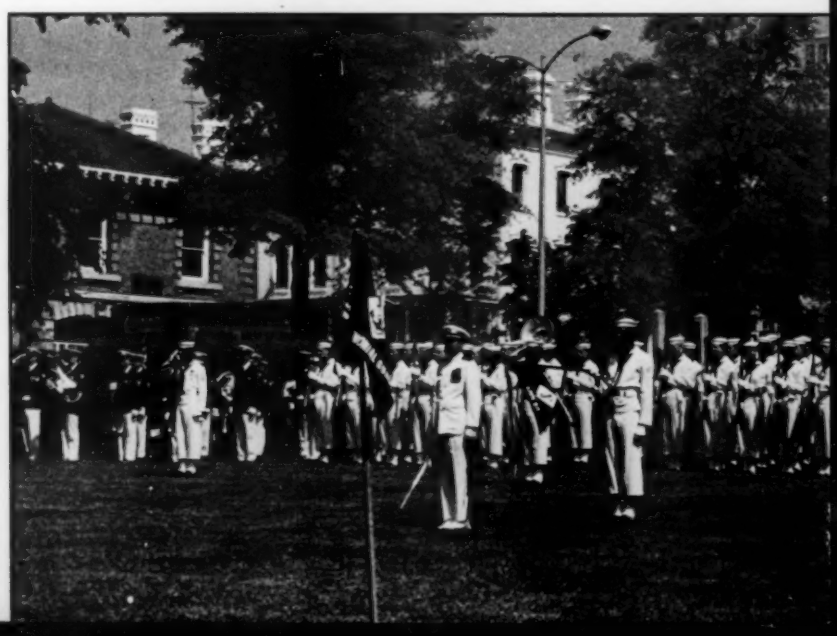
The careers of these two outstanding officers we honor today show a number of similarities. Both Admiral Marschall and Admiral Iselin were graduated from the Naval Academy and both served as line officers in surface ships before transferring to the Civil Engineer Corps. They both attended Rensselaer Polytechnic Institute and earned Bachelor's and Master's Degrees in Civil Engineering. They both attended the Armed Forces Staff College. Both served in a variety of billets in Washington as well as in the field with the Seabees, including tours of duty in Vietnam. They have spent the past several years together at the Naval Facilities Engineering Command, Admiral Marschall as

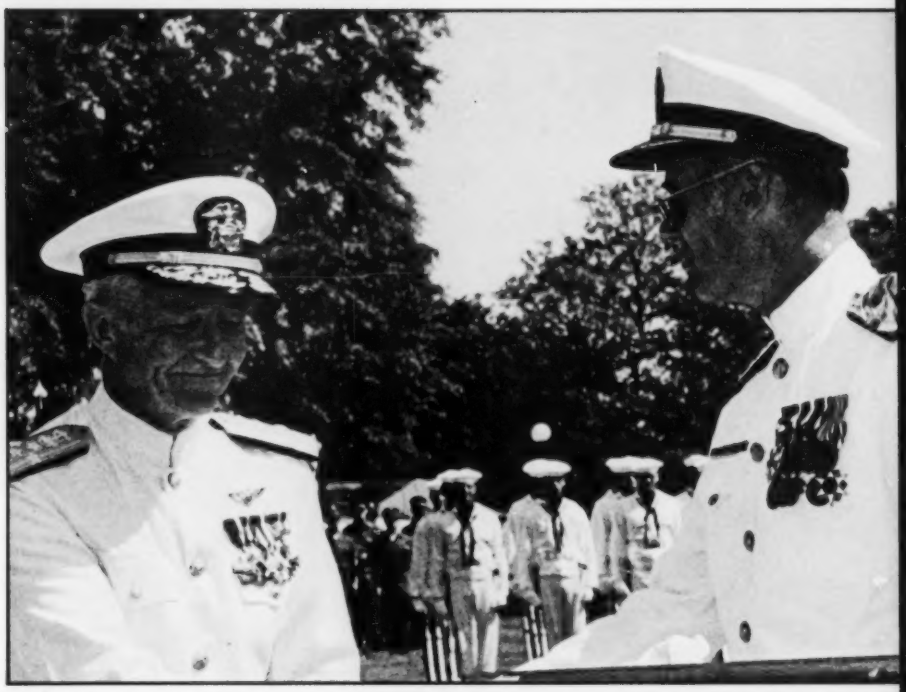
Commander and Admiral Iselin as his Vice Commander.

Admiral Marschall, during your four years in command, you have accumulated a remarkable list of accomplishments as the Principal Navy Witness before Congress for Military Construction Programs. You have been highly effective during a period characterized by the largest peacetime authorizations in history for Navy and Naval Reserve Construction Programs.

This accomplishment is particularly notable during a timeframe which saw double-digit inflation, the national energy crisis and the worst recession in the United States construction industry since World War II.

Your policies have dramatically expedited design completion and contract award performance, permitting significant savings in the light of sharply increasing costs. You have been a leader in the Navy's energy conservation and environmental protection programs,





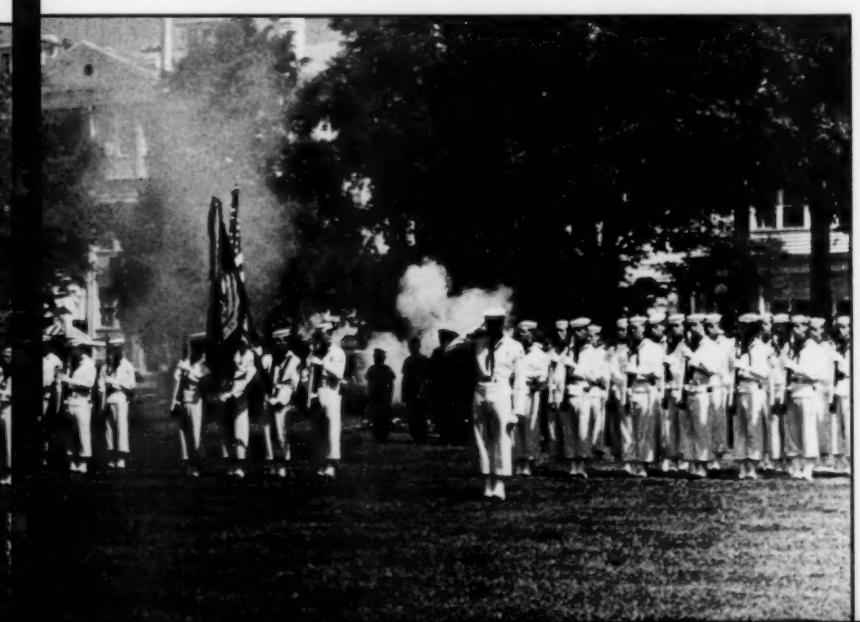
RADM Albert Marschall receives a Gold Star in lieu of a second Distinguished Service Medal from CNO, ADM James Holloway during NAVFAC Change of Command ceremonies (left). RADM Donald Iselin accepts congratulations from ADM Frederick Michaelis, CNM, after reading orders directing him to report as Commander, Naval Facilities Engineering Command (right). Traditional honors are rendered to retiring RADM Marschall during ceremonies at historic Washington, D.C. Navy Yard (below).

and you were instrumental in beginning the Navy Medical Modernization Program, and in commencement of construction on the vital Trident System Facilities.

Your list of accomplishments goes on and on, but what it all comes down to, Admiral Marschall, is that you have consistently demonstrated superior professionalism in a most important and demanding position. You have served your country and your Navy well.

Admiral Iselin, you have big shoes to fill in a job that will only get more difficult, considering future budgetary prospects. But you have demonstrated throughout your career that you are a man of action, having performed superbly at the Atom Bomb Site at Eniwetok and for four years under Admiral Rickover.

Your accomplishment at Guantanamo when Castro cut off the water to that base and in Vietnam during the massive buildup there are further indications of your ability to get the job done. You have been Vice



Commander of the Naval Facilities Engineering Command for more than three-and-one-half years and you are keenly aware of the command's programs, problems, strengths and weaknesses.

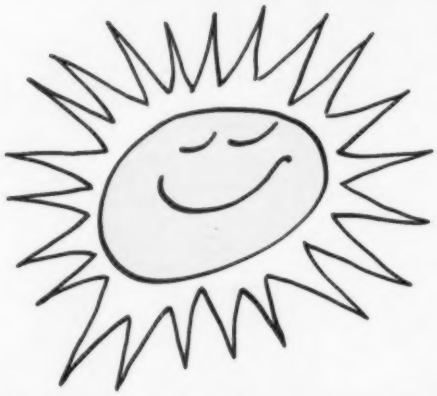
Your qualifications are the very highest, and I have every confidence in your ability to continue NAVFAC's record of high accomplishment. You have my complete support.

Ladies and Gentlemen, I am honored to be a part of this ceremony. The Naval Facilities Engineering Command is in good hands.

FAREWELL — RADM Marschall bids farewell to his friends, the Corps, the Seabees, and the NAVFAC family. RADM Marschall said he was "proud to have had the privilege of serving at the helm" of NAVFAC (above). In attendance at the Change of Command ceremony was "King Bee," ADM Ben Moreell, CEC, USN (ret). ADM Moreell was one of several former heads of BuDocks at the Change of Command (left).

PUBLIC WORKS

TECHNICAL NOTES



Sun Power for Fuel Savings

The Department of Defense is cooperating with the Energy Research and Development Agency and the Department of Housing and Urban Development to show the effectiveness of some commercially available solar heating and water heating booster systems to reduce energy consumption.

The Sumay solar water heating system is designed to be used in conjunction with the existing electric water heater in the house. Its function is to preheat the 26.7°C (80°F) water before it is electrically heated, thereby cutting down on electricity consumption.

A thermostat with a sensing bulb in the solar collector actuates a water circulating pump when the collector temperature rises above 37.8°C (100°F). The circulating water accumulates heat as it passes through the solar collector. The longer the water is circulated, the hotter it gets. The pump will stop when the collector temperature drops below 37.8°C, usually when the sun is not shining.

When no water is being used and the sun shines brightly, the heated water just recirculates through the storage tank and the solar collector keeps the water heated for night and early morning use.

When hot water is in use, the heated water in the electric heater is being consumed and is replenished with water from the storage tank which has been preheated by the sun. The electric heater does not operate when the preheated water is 60°C (140°F) or more.

The energy conservation advantage over the present system is considerable. The average family of four uses 6,200 kilowatt hours (KWH) a year. The solar heating unit is expected to save 5,170 KWH annually. Since it takes 340.7 liters (90 gallons) of fuel to produce one megawatt (42.05 KWH/11.11 KWH/gal.), the estimated annual savings effected by the solar water heating units would be 1,760 liters (465 gallons) of fuel oil.

Considering that there are 1,881 Navy housing units on islands, solar heaters installed on all of them could effect a savings of 5,070,632 liters (1,339,665 gallons) of fuel a year on Guam alone.

Additional information may be obtained from Public Works Center Guam.

Preservation of Wood Water Tanks

Wood tanks are stil used by some naval activities for water storage. These tanks offer low initial cost, long service and minimal maintenance requirements. Many tanks have been in service for 50 years.

Painting is not needed but may be required for esthetics or safety reasons adjacent to airfields. However, the interior should never be painted. Paint used on the exterior must allow the wood to breath. Latex would be a suitable selection.

If a leak develops, the following steps are recommended:

- Tightening of the metal hoops. This must be done with the tank empty. Hoops cannot be adequately tightened with the tank full.
- Installation of steel shims or wedges. These should be placed approximately 15 cm — 25 cm (6" — 10") from the source of the leak. Caulking should not be used to try to stop leaks.
- If the leak still persists, then installation of a PVC flexible tank liner should be considered. The liner should be 30 mil type BOEE (FDA approved for potable water). A tank liner is relatively inexpensive and can significantly extend the service life of the tank.

A tank that has been emptied and allowed to dry completely must be carefully refilled. The refilling should be done at 0.3m (one foot) intervals with ample time in-between to allow the tank to swell and seal.

Additional information may be obtained from J. M. Reavis, Code 102A, LANTDIV, Autovon 690-7121.

PUBLIC WORKS TECHNICAL NOTES

Metrication

The metric system is an international language of measurement. Its symbols are identical in all languages. Uniformity minimizes the chance of errors. The following publications have been adopted by the Department of Defense and are intended to serve as a guide to accepted metric practices:

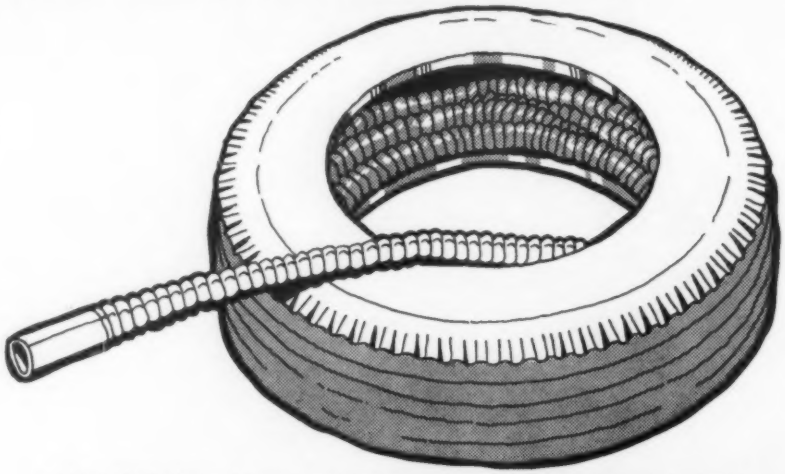
ASTM E 380-76 "Standard for Metric Practice"

ANMC-75-1 July 75 "Metric Editorial Guide"

These publications are available to Federal and Military agencies without cost from:

Commanding Officer
Naval Publications and
Forms Center
5801 Tabor Avenue
Philadelphia, PA 19120
Telephone No.:
Autovon 442-3321;
Commercial (215) 697-3321

Additional questions or comments should be directed to the EFD Metric Focal Points or to F. E. Hein, NAVFAC HQ, Code 0432A, Autovon 221-0452; Commercial (202) 325-0452.



CABLE STORAGE — An easy method of storing sewer cleaning cable may be made with the use of old truck tires. As the cable is unwound from the pipe, it may be wound directly into the tire as shown above. This method keeps the cable untangled and easy to insert or withdraw.

Moisture Meter for Roof Inspection

The Navy today is vitally concerned with energy conservation. Buildings are protected to make them as weatherproof as possible. One prime factor in conserving energy is proper roof insulation. Wet insulation loses its insulating properties to the extent that when saturated it has no insulating capacity. Roof inspection is necessary to ensure that roof failures are detected at an early stage to preserve the insulation.

One method of built-up roof inspection employs the use of a nuclear moisture meter. This meter can count the hydrogen atoms in the H_2O formula at various locations used on the roof, and thus determine the quantities of water at specific locations. Some activites currently use this procedure for roof inspection.

Additional information may be obtained from R. Coughlin, Code 101, CHESDIV, Autovon 288-4724.

Steam and Water Analysis Programs

Steam and water systems analysis for distribution systems has been enhanced by the addition of two powerful computer programs for use by the Utilities Divisions in the Engineering Field Divisions of NAVFAC.

The program enables the engineer to study systems in their entirety and reduce the time required for laborious calculations. The programs are expected to have an impact on O&M,N and MILCON by identifying problems, limitations of unnecessary construction, and optimization of the MILCON and O&M,N dollar.

Additional information may be obtained from John Hansen, LANTDIV, Autovon 690-7331.

New Shower Heads for Saving Water

A water saving device for showers can be installed inside an existing shower arm (the showerhead does not change). The device is a 11.36 1/m (3 GPM) at 131.71 kg/cm² (45 PSI), three-chamber celcon cylinder. Its cost is about 75c.

Another water saving device is a GSA schedule item No. N11S-G-4174, Contract GS-00S-04038, with a GSA cost of $6.47. It is a 9.46 1/m (2.5 GPM) at 175.21 kg/cm² (60 PSI) showerhead which replaces the existing showerhead.

Additional information may be obtained from A. S. Gallup, Code 102A, LANTDIV, Autovon 690-7121.

Smoke Detectors

Many installations are not aware that UL listed smoke detectors are available through the GSA Federal Supply Service at a considerable discount from regular prices.

Ionization and photoelectric types can be ordered in either plug-in or wired-in units. Battery powered ionization detectors are also available. The cost is generally less than $50 and some models are under $20 each. Smoke detectors are listed in Federal Supply Class 6350, special item no. 246-30.

Additional information may be obtained from R. L. Middleton, Code 102H, LANTDIV, Autovon 690-7121.

(Continued from page 29)

used by our detailers in the summer of '77 are:

TOUR LENGTHS	
ENS, LTJG, LT	2 YRS CONUS & OVERSEAS 12-48 MOS. OVERSEAS (DoD PRESCRIBED)
LCDR, CDR, CAPT	3 YRS CONUS 12-48 MOS. OVERSEAS (DoD PRESCRIBED) 2 YRS ROICC, SEABEES & INDEP. DUTY 2 YRS COMMAND

The distribution of CEC billets by job function is currently shown in the display graph on pg. 38. Public Works billets are the most common for all grades with over half the junior officer and one-third the senior officer billets in this area. Seabees and contracts duty are fairly evenly split with about 13% of the total for each. The rest of the billets are in EFDs, major staffs, reserve programs, instructors, students and special programs.

The geographical distribution of billets currently is as shown below:

CONUS	68%	OVERSEAS	20%	SEABEES	13%
East Coast	(26%)	Atlantic/Europe	(8%)	Gulfport	(4%)
West Coast	(21%)	Pacific/Asia	(12%)	Port Hueneme	(5%)
Wash. DC	(15%)			Other	(3%)
Other	(6%)				

It can be seen that only 8% of our billets are in the Atlantic/European area, including less than a dozen junior officer billets, yet about 60% of our officers mark Europe as first choice on their Duty Preference Card.

Compounding this situation, only 13% of our billets are in the Contracts area, yet 60% of our officers request a Contracts billet as first choice of duty. This makes it difficult or impossible for detailers to make everybody happy!

Detailers must necessarily plan far ahead in order to work out all factors affecting each assignment. No detail is a separate entity but is, instead, part of a chain of five to eight moves. Once the officers and billets are matched, timing becomes critical. If each officer takes thirty days leave, plus travel and proceed, plus turnover time in each billet, a complete change cycle can take almost a year. Obviously, everyone cannot move during the summer or regular school breaks.

Detailers normally start planning moves 8-12 months in advance. "Slates" of proposed detail chains are prepared and a series of checks are initiated both at BUPERS and in the field.

While tentative slates are prepared as early as a year in advance, individual assignments are announced only four to six months before execution. Since many circumstances (selection boards, command changes, personal problems, billet changes, etc.) can affect any individual detail, slates are constantly being revised. Premature job assignment notification could cause too many false starts by officers whose assignments may have to be changed as a slate is finalized.

As with all "best laid plans of mice and men..." there will inevitably be the last-minute change which will generate an immediate requirement for an officer for a specific function. When this happens the detailer has to go to "general quarters" to meet the need. This often requires breaking one or more slates and a number of officers are bound to end up with short-fuse details instead of the ideal six months notice. This points up the need to keep your detailer informed of your needs and desires, through the preference card, at all times.

The CEC Officer Preference and Personal Information card should be updated and forwarded to your detailer each time there is a change on the card. Changes in marital/dependency status, address, phone numbers, ages of children, etc., should be kept current in the detailer's files. Regarding billet and location desires, it is good practice to list job and area preferences in general terms (i.e., PWO Southeast or AROICC West Coast) on the front of the card and then list specific desires on the back. This will enable the detailer to match more closely your desires with the needs of the Navy and at the same time alert him to specific billet interests.

Limited Duty Officers serve and are developed as officer technical *managers* while Warrant Officers are needed as officer technical *specialists*. Both communities are made up of Seabees who have excelled in their specialty and were selected to become officers to fill a need for their technical and managerial experience and expertise.

The buildup of the Naval Construction Force during the Vietnam conflict resulted in increases in our need for, and selection of, LDOs and Warrants. In the late sixties, the Corps had over 90 LDOs and over 60 CWOs. However, requirements for LDOs and Warrants have now been significantly cut back. By the end of FY77, our authorized strength for each community will be 28 officers.

The reduction in officer specialists has been accomplished largely by attrition in the last seven to eight years. This has affected our ability to select and access new officers into these communities. For the past three years we have received only token quotas for LDO and Warrant Officer accessions. We will be down to 25 LDOs and 31 Warrants by the end of FY77, and it is anticipated in future years we will be able to select three to five new officers in each community annually.

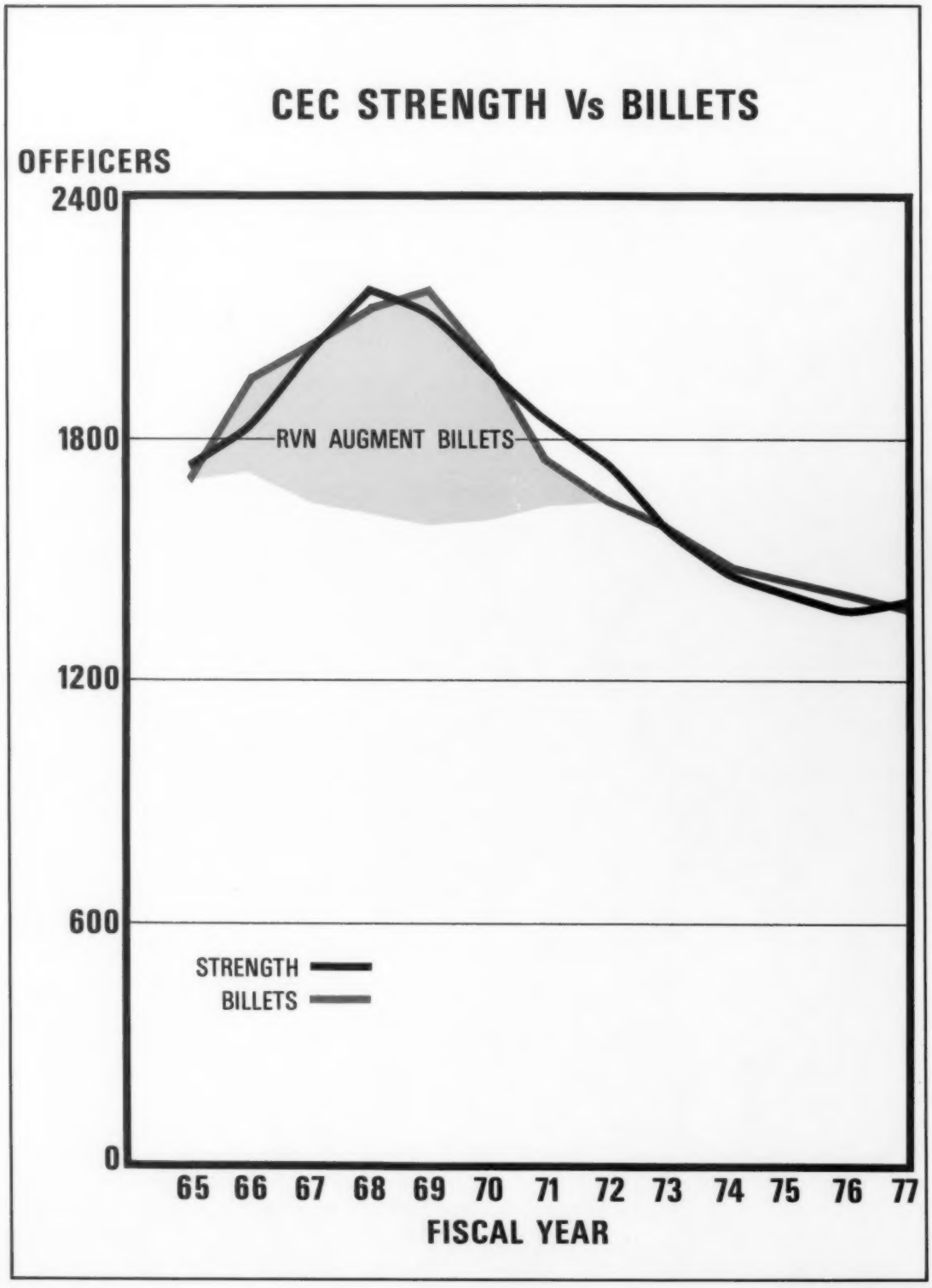
Promotion opportunity for both specialist communities is expected to remain excellent in the near future. Limited Duty Officers have the same promotion opportunity as the line standard fraction in each grade. Warrant Officers were given 95% opportunity to W-3 and W-4 in FY77 and it is expected that in future years promotions will not vary much from that percentage. Below zone opportunity exists for officers who excel and demonstrate a capacity for early increased responsibility.

SUMMARY

In the summer of '77 the Civil Engineer Corps is as strong and viable as ever in the naval establishment. The changes affecting our nation and the Navy will certainly affect the Corps and some accus-

tomed policies and procedures will be revised.

But we are not alone. The entire Navy is faced with budget constraints severely affecting operating resources and personnel policies. We must, as individuals and professionals, continue to provide the same high quality service to the fleet that has been the hallmark of our history. In so doing we will be assured the status of the Civil Engineer Corps will remain secure.



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MY GRADE IS _____
(Rank, GS-)

I have _____ years of accredited education (elementary, high school, college).
I hold a _____ degree in _____.
I have _____ years of government service (civilian and armed forces combined).
I have/have not contributed articles or material to The Navy Civil Engineer.
I have been a reader of The Navy Civil Engineer for _____ years.
I usually read: ☐ all; ☐ more than half; ☐ less than half; ☐ hardly any of the contents of The Navy Civil Engineer.

MY RATING OF THE MAGAZINE

	Excellent	Good	Fair	Poor
My *overall* opinion is	☐	☐	☐	☐
and of editorial content	☐	☐	☐	☐
and of format	☐	☐	☐	☐
and of page design	☐	☐	☐	☐
and of photographs	☐	☐	☐	☐
and of printing and paper stock	☐	☐	☐	☐
and of mailing and distribution	☐	☐	☐	☐

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	I LIKE	DON'T LIKE
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The Navy Civil Engineer Magazine
Code C20M
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PERSONAL COMMENTS OR RECOMMENDATIONS

(Signature is optional)

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Naval Facilities Engineering Command
SITUATION REPORT

FIRES CLAIM FIVE LIVES, CAUSE $555,000 DAMAGE - Property damage to Navy and Marine Corps family housing units resulting from fire during FY76 amounted to over $555,000. Five deaths and 61 personal injuries resulted from these fires. The chief cause of fires in family housing during this fiscal year was determined to be associated with cooking ranges. Of the 343 fires reported, over 30% were traced to ranges. Other causes, in order of percent occurrences, were matches and lighters; wiring, cables and fuses; smoking materials; and electrical devices. Two deaths were attributed to fires caused by electrical devices, one from smoking material, one from stoves, furnaces and heaters and one from an undetermined origin. Three of these deaths were children. (See page 23.)

The loss of life, personal injuries and property damage resulting from fires is a matter of great concern. Fire prevention is a continuing, everyday responsibility. An effective fire safety program within family housing is a must. NAVFAC has been working closely with OSD in their efforts to develop and promulgate effective criteria for smoke detection devices with a goal to install detectors in all family housing units.

(NAVFAC Code 08)

PUBLIC WORKS DEPARTMENT MANAGEMENT SYSTEM (PWDMS) - Final functional testing of the shore facilities inspection module (formerly the continuous inspection module) for control inspection of facilities and preventive maintenance inspection of equipment was completed this spring at CBC Gulfport, Miss. (see Fall 1976 edition of The Navy Civil Engineer). Formal functional documentation (NAVFAC-428) and computer programs and documentation (for operation on IBM 360/370 hardware) will be published and available in the fall.

NAVFAC public works division and NAVSEA program manager for Shipyard Management Information Systems (MIS) Improvement are presently working together for the possible inclusion of the PWDMS modules into shipyard MIS application. NAVFAC is participating in user task force meetings on shipyard MIS. An update will be provided later.

(NAVFAC Code 10)

The Civil Engineer Corps Welcomes Graduates of Basic Class 143, Naval School, Civil Engineer Corps Officers

Front row from l. — Ens Thomas Lowry, BSME Oklahoma State, to AROICC Patuxent River; Ens Sergio Besu, BSCE Detroit, to NAVSTA Roosevelt Roads; Ens Robert Davis, BSEE Ohio State, to MCB Camp Lejeune; Ens Roland Moreau, BSEE Rensselaer Polytech, to PWC Subic Bay; Ens Gerald Wheeler, BSME/CE Utah, to NAVSTA Panama; Lt Paul Crosmer, BSME South Dakota, to NAVSHIPYD Charleston; Capt Thanus-Sak Piamsai, B. Arch Chulalongkorn, to Royal Thai Army; Ens Charles Obetts, Jr., BSCE/MBA Pittsburgh, to NAS Willow Grove; Ens Roger Weymouth, BSCE Connecticut, to PWC Subic Bay; Ens Brian Kelm, BSCE Iowa State, to SUBASE New London; Ens Charles Thompson, BSCE Tennessee, to COMNAVTRACOM Morocco; **Middle row from l.** — Ens Robert Smith, to NCBC Gulfport; Ens Michael Meyers, BSCE Lawrence Tech, to COMNAVTRACOM Morocco; Ens Hugh Reams, BSCE Penn State, to PWC Norfolk; Ens Fred Beckmann, BSCE UCLA, to NAVCHAPGRU Williamsburg; Ltjg Joseph Furco, MSCE Clarkson College, to AROICC Key West, Ltjg Edward Bender, MSE Purdue, to NMCB-1; Ens James Frost, BSCE Tennessee Tech, to NAS Jacksonville; Ens Benjamin Spaulding, BSME Rensselaer Polytech, to NMCB-3; Ens Patricia Foley, BSCE Washington, to AROICC San Diego; **Back row from l.** — Ens Robert Brown, BSCE Connecticut, to NMCB-1; Ens James Bell, BSCE Oregon State, to SUBASE Bangor; Ens Stanley Strickland, BSCE/MSME Oregon State, to AROICC Brooklyn; Ens Kurt Sisson, B. Arch. Tennessee, to NAF Andrews AFB. **Missing are** Ltjg Joseph Roberts, BSCE Utah, to NAVSHIPYD Mare Island; Ens Wayne Haefner, to HEDSUPPACT Taipei; and Ens Reynold Sefton, AS Northern Virginia Community College, to NAVSTA Keflavik.

Seabee Journal '77

Naval Construction Battalion Operations

Naval Mobile Construction Battalion 3 (NMCB-3) was located on Guam in May 1976 when Typhoon Pamela struck the island. Commander McNeill has recounted his unit's participation in disaster preparedness and relief for a forthcoming Seabee training film. Excerpts from the film's script illustrate the Seabees encounter with the not-so-ladylike Pamela.

NMCB-3 vs Typhoon Pamela

By CDR J. E. McNEILL, CEC, USN
Commanding Officer
Naval Mobile Construction Battalion 3
PE, Penn.

QUESTION: Cdr McNeill, as commanding officer of NMCB 3 on Guam, can you describe the task of the battalion in preparing for the arrival of typhoon *Pamela*?

CDR McNEILL: The operation orders from the commander, Construction Battalions, Pacific, for our deployment to Guam specified that we would provide local emergency support when needed. Typhoons are part of life on Guam.

Prior to arrival on Guam the battalion had prepared a destructive weather plan which specified actions to be taken by the battalion during normal typhoon conditions on Guam and each of the increased readiness conditions. These actions included proper securing of buildings, projects, equipment and material, and positioning of emergency equipment and supplies. Each company and staff element was assigned certain tasks for each storm condition. For instance, Alfa company, the equipment company, tasks for Typhoon Condition II, meaning typhoon strength winds expected within 24 hours were:

To provide working parties for emergency repairs and for securing of areas as directed by the command post; ensure that areas including job sites, barracks and offices be prepared for destructive weather; secure all window louvers; positively secure all exterior doors and brace as necessary; if required, brace windows with mattresses and furniture to prevent leakage.

Provide for continuous manning and communications in offices or company command post.

Ensure that individuals take adequate precautions to prevent damage to personal property.

Fill at least two trash containers with water and place in heads as emergency flushing water.

Move all available fuel trucks, water buffaloes, generators, and water trucks to locations in Camp Covington designated by the command post. Have vehicle operators available in the company command post. Arrange heavy equipment to provide maximum protection. Position portable generators as directed by the operations officer to provide emergency power. Double check to see that all vehicles are fueled. Empty and secure all loose trash containers in Camp Covington.

QUESTION: Once you were advised that Typhoon *Pamela* could possibly hit Guam, what actions did the battalion take to prepare for the storm?

CDR McNEILL: *Pamela* was identified on 15 May as a tropical storm with the potential of upgrading to a typhoon with Guam being in its potential track. At that time we began to review carefully our destructive weather plan and took action to ensure rapid transition through each of the typhoon conditions. Typhoon Condition III was set on 19 May followed by Condition II and Condition I on 20 May, with the storm striking Guam on 21 May.

QUESTION: Were you called upon to assist other commands in preparing for the storm?

CDR McNEILL: Yes, on 20 May, the day before the storm struck, we were called upon to assist the Public Works Center (PWC) Guam in securing windows in the family housing areas. For these efforts we utilized one of the normal military work squads in the Charlie Company structure. At this point we had established the battalion command post and activated the typhoon recovery radio communications net which ties the island commands together on a common frequency. All requests for assistance were channeled to the battalion through the PWC Guam command post, where 30th Naval construction regiment representatives had established a watch. PWC Guam is assigned responsibility under the destructive weather plans as the overall coordinator of engineer resources.

QUESTION: After the typhoon passed, when did you send out your first teams and what were their duties?

CDR McNEILL: The strong winds associated with the storm lasted through the early hours of 22 May. It was obvious from reports received through the night, that the opening of roads and restoring utility services would be the first priority.

While the winds were still blowing on early 22 May we dispatched three teams, each having a construction electrician and mechanic to assist the PWC in operating water pumps.

At 0530 on 22 May two damage survey teams were dispatched to inspect the main island roads. Clearing of island roads commenced and was completed at 1715 that day. This operation included use of chain saws to remove fallen power and telephone poles, removal of such debris from the roads. Simultaneous with this effort we commenced our own internal damage surveys. As other naval activities assessed damage and scheduled their emergency work, continuous requests for Seabee assistance flowed into the battalion command post.

QUESTION: What communications systems did your teams have?

CDR McNEILL: The winds from the typhoon caused severe damage to the utilities system on the island. All camp telephone service was lost. Camp power was lost at 1110 on 21 May with all island power lost at 1410 on 21 May.

The lack of telephones was more of a problem for internal battalion communications. We relied upon the handheld units for internal communications until telephone service was restored.

During the period of the Memorial Day weekend the battalion coordinated support to the 1,000 Navy men in the cleanup in the civilian community. To coordinate this work one officer was positioned aboard the flagship of the Commander, Amphibious Squadron, and senior enlisted personnel with PRC 77's were in the field to coordinate men and equipment. The battalion primary frequency was used for all these operations. With other operations going on simultaneously, the airways were crowded. In order to communicate between the dispersed groups, marine corps personnel from the Amphibious Squadron set up a mobile relay station.

QUESTION: Did you have any problems with supplies for your teams?

CDR McNEILL: Our immediate job was to restore the operational capabilities of vital facilities. A number of critical facilities had lost portions of roof or siding. Some of the most urgent jobs were therefore geared to ensure temporary water tightness of structures. Many structures requiring repair were pre-engineered or structural steel buildings with metal roofing and siding. The non-availability of metal roofing and siding matching that on the buildings resulted in our designing other expedient means to provide water tight integrity. For instance, we used felt type roofing over plywood on warehouses and hangars where sheet-metal matching the existing was not available. These temporary repairs were later replaced with permanent repairs.

QUESTION: Commander, did the battalion suffer any casualties during the storm?

CDR McNEILL: No, the designated shelters within the camp, the bachelor enlisted and officers quarters held up quite well. These pre-engineered buildings were designed for 150 knot winds. As with all structures on the island, there was some minor water damage. The only personnel not in quarters during the storm were those on watch at the armory, which was located in a large wood frame, tin roofed structure. This structure which housed battalion headquarters received severe damage. Most of the roof was blown away with consequent interior damage. In fact, as a result of the storm, we had to relocate all the battalion administrative spaces. Temporary shops were set up to maintain our equipment until the building was returned to safe operation.

QUESTION: How severe were the working conditions after the storm?

CDR McNEILL: Within the camp, as I have already noted, the most severe damage was to the admin and shop spaces structure. With large chunks of the wood frame and metal roof still attached at one end and swinging in the wind, we had to wait until the winds abated before we could safely begin recovery work. Even then, we had to be extremely careful of falling debris.

QUESTION: What suggestions do you have for other commanding officers that might be faced with the same situation?

CDR McNEILL: First, the unit must have a destructive weather plan, and all hands must be completely familiar with their designated responsibilities. Familiarity and training to strengthen this plan must begin at homeport. Training should include various methods of securing materials, equipment and facilities. In some of the deployed camps we have permanently positioned emergency generators at critical facilities such as the dispensary. The destructive weather plan should include positioning of other units at areas such as the battalion command post (CP) and company CPs.

The number of generators may not be sufficient to operate all these facilities, particularly if there is a total power outage. Availability of assets held by others that could be available in a contingency should be explored.

Secondly, a list of items to be included in each CP must be developed. And the camp must be examined carefully to ensure that it can be "buttoned-up" quickly to withstand a typhoon.

One final observation — Organizationally, the NMCB is well suited for disaster recovery. The command and control network of the battalion gives the needed versatility in movement, skill, logistical base, and control required to cope with the varied disaster situations. On Guam the unique capabilities of the battalion were instrumental in minimizing damage by its effective action and by providing immediate response capability for the earliest recovery efforts despite severe damage to our areas, shop and administrative facilities.

• Roosevelt Roads, P.R.

Seabees and the Puerto Rican scene

By JO3 JOE FOUNTAIN
Naval Mobile Construction Battalion 4

The move to shift the battalion started March 31st when NMCB-4 dispatched an advance party to Roosevelt Roads, Puerto Rico, to prepare for the arrival of the battalion's main body. Two weeks later, Camp Moscrip was officially turned over to CDR G.J. Bednar, CEC, USN, commanding officer of NMCB-4, by CDR W.A. Simmons, Jr., CEC, USN, commanding officer of NMCB-1.

The following week, NMCB-4 was earnestly engaged in construction work. One of the major projects is building a new commissary replacing that of 1943 vintage. Excavation for the new structure will require the removal of 38,230m³(50,000 yds³) of earth or 10,000 truck loads. The projected completion date is late 1978, and probably by that Seabee unit succeeding NMCB-4. The road near the site, Langley Drive, is being widened to four lanes for easy access to the parking lot. In other areas the road is receiving an asphalt overlay which is scheduled to be finished by NMCB-4.

Other jobs in progress include conversion of the officer's club to a petty officer's club. The basic frames are up and the concrete laid with a new extension to include a large dining room. NMCB-4 plans to finish this assignment in October.

Under renovation is an aircraft parking apron with cracked concrete slabs replaced. Deteriorated joint sealer will also receive remedial treatment.

Projects inside Camp Moscrip include new buildings for special services, supply, administration, berthing, equipment repair and medical facilities. Washroom and toilet facilities will be replaced.

NMCB-4 has also deployed four other units, three in the Western Hemisphere and one, Diego Garcia, located in the Indian Ocean area.

At the base, shared with the British, work is underway to construct a pier in the lagoon. Without towns to visit during liberty hours, the men pass their off-duty time enjoying the excellent recreational facilities.

At Argentia, Newfoundland, the main assignment is to stop serious erosion along the beach. At Andros Island, in the Bahamas, work consists of extending a quaywall, building a supply-administrative building and parking lot, and completing hobby shops. Several projects are also underway to help collect and store rain water.

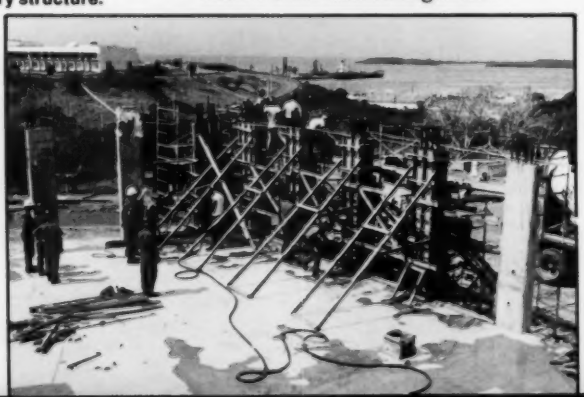
At Guantanamo Bay, Cuba, the work centers mainly on housing rehabilitation, and living conditions for the Seabees are extremely good. Although there is no liberty in Cuba, recreation facilities are excellent, and trips are available to Haiti.

Liberty is also fairly good in Puerto Rico, but with considerable distance between the base and San Juan, most personnel remain at the base during the weekdays and reserve their trips for weekends.

There are many attractions in San Juan, the most famous being the old forts at El Morro and San Cristobal with wall construction dating back to the 16th century. Old San Juan, with its historic buildings and narrow streets, was once enclosed by stone walls. Portions of that wall are still standing. In most of the cities are colleges, museums and even hamburgers of golden arch fame. Most Puerto Ricans have a working knowledge of English although the main language is Spanish. Industry and business flourish.

For those who have an aversion to cities and crowded places, peace and quiet can be found in the surrounding countryside. Mountains, dairy farms, cattle, sugar cane fields, crab farms, etc., extend over the island.

In addition to the assigned construction tasks, NMCB-4 Seabees voluntarily worked on several civic action projects in the local communities. The projects include drainage work at the School for the Deaf; rehabilitation of an old peoples' home in Fajardo; and construction of a Catholic retreat house in Naguabo. The men volunteer their weekend free time to do this work showing their concern for their Puerto Rican neighbors.



NMCB-4's construction efforts include replacement of aircraft parking apron (left) and new commissary structure.

NMCB-40 on alert

By ENS WILLIAM P. OSTAG, CEC, USN

• Port Hueneme, Calif.

"Peace through Readiness" was this year's Armed Forces Day theme. Inherent in the mission of a Naval Mobile Construction Battalion (NMCB) is just that — readiness. And this position is thoroughly tested when a battalion is designated as an "alert" unit. The battalion is required to be in high readiness — permitting it to move within six days. Six days to move tons of organic materials, supplies and equipment and nearly 600 Seabees, doesn't just happen! Training for quick dispatch of men and material begins long before the battalion assumes its alerted role.

In August 1976, NMCB-40 set its homeport goal to assume its role as the Pacific Alert Battalion immediately upon arrival in Guam. With critical jobs changing hands the first job was to stabilize assignments of key personnel and to identify and train an air detachment as the forerunning unit.

The embarkation staff developed plans for contingencies including constructing standardized shipping containers that would be used in all of the battalion administrative areas. Concurrently, the Seabees underwent both military and technical training in classrooms and field exercises. Extensive qualification in the battalion's weaponry was required.

As the homeport training period moved forward, the battalion was strengthened with trained personnel. In early December a test of the battalion's ability to alertly respond was held. The exercise included an actual deployment to a site distant from the homeport.

The 89-man air detachment was sent to Bridgeport, Calif., (located in the High Sierras northeast of Yosemite) to establish the camp for the main body which would be arriving within 48 hours. While preparing for the scheduled arrival, a message was received that dangerous winter weather threatened and the air detachment would redeploy to Broome Ranch, located in Camarillo, Calif., a distance of 300 miles.

The detachment had 36 hours to pack up gear, close out the construction projects, and convoy to Broome Ranch preparing a new base camp. The tired but highly spirited group of men completed the movement and the new camp on

SEABEES OF FORTY load 106mm recoilless rifle for firing at range of the Marine Corps' Camp Pendleton, Calif. In training and combat the Marines and Seabees are closely associated.

81mm MORTAR is included in Seabee's defensive arsenal. The Navy constructionmen are trained to defend themselves and their works.

NMCB-40

(Continued from preceding page)

schedule.

The battalion spent four days at Broome Ranch living in a tent camp, subsisting from field kitchens and conducting military training operations. A mock attack on the command by an "aggressor" force tested the command's defensive perimeter and concluded the training problem. There is still discussion within the command on who "won." With this behind it, the battalion was declared, indeed, ready, and upon arrival in Guam, NMCB-40 was designated the alert battalion.

Within three weeks the Commander, Naval Construction Battalions, U.S. Pacific Fleet, conducted an exercise to further evaluate the battalion's alert capabilities. The battalion was directed to simulate the redeployment of the air detachment to a friendly foreign nation. The main body was to board the *USS Durham* and the *USS Schenectady,* arrive at a port of entry, and convoy to an inland site. The battalion was to perform construction and engineering in support of the 1st Marine Air Wing. All action to redeploy was to be taken with the exception that actual redeployment would not be made.

Upon receipt of the "warning order" the mount-out control center (MOCC) and company command posts were established and were manned around the clock.

The battalion then started its "mount-out" exercise. Tools and equipment reclaimed from existing job sites were readied for ship loading. The operations department reviewed the construction requirements, developed work schedules and identified supply needs and potential problems. The supply department determined sources of supply and logistics support thought to exist in the deployment area. Maps and other information pertaining to the site and the proposed convoy route were gathered and analyzed.

The first phase of the operation was to move the 89-man air detachment using a mixture of C130 and C141 aircraft. While equipment and supplies were being transported to the staging area, the Officer in Charge insured that personal affairs of each man were in order. Service records were reviewed, wills and powers of attorney verified, personal effects properly stored, and the detachment briefed on the mission.

With the air detachment deployed within the 48-hour deadline, the battalion concentrated on moving remaining supplies, equipment and personnel. The embarkation staff continued to develop load plans for the ships while concurrently the equipment and materials were being transported to the staging area. Many of the prime movers and trailers had to be loaded on the ships first, but were also required to transport equipment and supplies to the staging area — a dispatcher's nightmare — that was resolved only through hard work and ingenuity.

Company commanders continued to check with last minute surveys and inspections. Finally the operations order was issued, which summarized the mission and the details regarding supply, construction, intelligence, command and control, and administrative matters.

All hands were further briefed by their company commanders. After six continuous days of exhausting work, each man was ready to board the ships and sail for their destination.

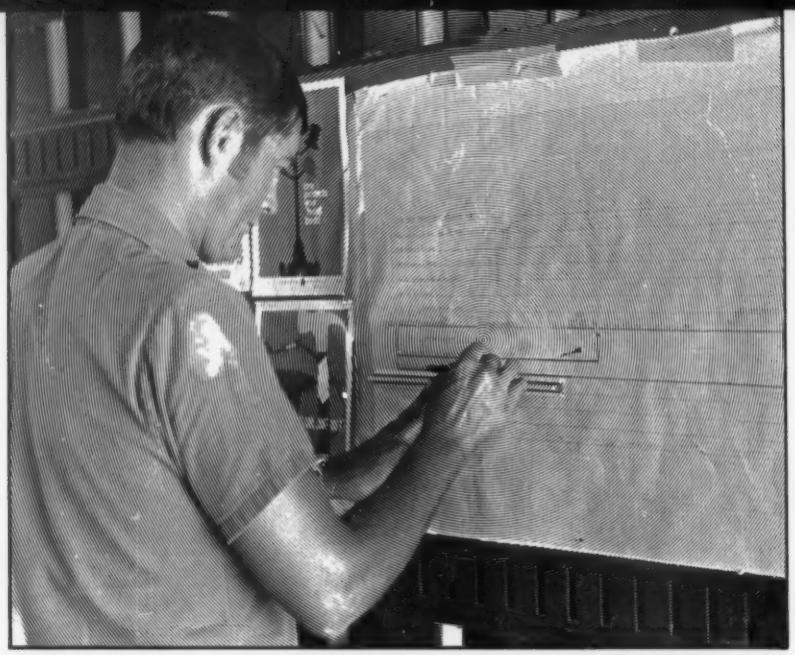
The simulated exercise was termed a success. The battalion has proved that it was ready and alert to redeploy upon order within specified time.

After the exercise was completed the battalion settled into performing other missions — that of construction operations at Guam and detachment sites.

Regardless, the readiness posture remains in the forefront and NMCB-40 has proven it is fulfilling its role of the Pacific Alert Battalion.

NMCB-40's equipment and rolling stock is positioned for simulated deployment to overseas site.

BREAKDOWN of small arms with complete inspection and cleaning is everyone's responsibility.



Seabees CAN manage!

By CDR C. E. FEGLEY III, CEC, USN
Commanding Officer, NMCB-62
P.E. - Va.
and
LCDR J. C. MILKINTAS, CEC, USN
Operations Officer, NMCB-62
P.E. - Ill.

"SEABEES can't plan or use modern construction management methods because they can't handle the administrative paperwork."

We've heard that statement made more times than we care to recount and nothing could be further from the truth. Our senior enlisted personnel are eager to learn and adopt sound construction management techniques if shown the way, and, encouraged to do so.

The ability to plan, organize, direct and coordinate an entire construction project "efficiently" should be a prerequisite for promotion into our higher enlisted rates.

The first step in project management is organization, and at its most efficient closely parallels a civilian construction firm. NMCB-62 employs a modified project management organization that closely resembles a private contractor. The line company commanders are similar to and function as project managers; chief petty officers and top-flight E-6s are project superintendents and crew leaders are equivalent to trade foremen.

The remainder of the military company serves as a labor force to be assigned to projects without regard to specific crew specialty. Highly specialized crews, such as tex-coating or roofing, remain intact and may subcontract to other military companies.

There are normally no intermediates in the chain of command between the company commander and his project superintendents. Alfa and Bravo companies, because of their size and distinct types of work, do at times employ intermediate levels of supervision.

The assistant company commander and/or company chief are strictly staff assistants to the company commander. The rest of the company staff, material expediter and small project management staff, removes the burden of expediting, making equipment arrangements, ordering concrete deliveries, and smooth network updating from project superintendents.

The next step is training. Company commander, project superintendents and crew leaders must be trained in administrative procedures of construction management. They require training in network analysis, estimating, and material requisitioning procedures. This training is obtained from formal schools, special Seabee training courses and battalion training programs.

Ideally, the battalion knows its project assignments prior to the second month of homeport. The regiment has provided copies of each project's plans and specifications. Company project assignments are made by the operations officer, and companies name the project superintendent and crew leaders. Regardless of project size and whether it is assigned in homeport or on deployment, the same basic planning process should be followed. Time must be allotted to complete proper planning or the consequence will be hip-pocket, day-to-day management.

Alfa and Bravo companies designate crew leaders to work as subcontractors directly with the prime contractor's (lead company's) planning staff. Senior personnel in Alfa and Bravo companies supervise the *technical* work of the crew leaders.

The key to successful construction management is placing total responsibility with the project superintendent and giving him the authority to perform.

Now the work begins for the project superintendent and his staff of crew leaders. First, he decides on the network logic and prepares the network in rough format (engineering aides smooth it for him). The logic is reviewed by the company commander and is approved by the operations officer. Once the superintendent has his project's activity breakdown, the remainder of the planning is developed by activity; i.e., manpower estimates, specific rating requirements, special skills, materials, construction equipment, special tools, quality control plan and safety plan.

The quality control (QC) and safety plans are submitted to inspectors and the safety chief who review, modify or approve them. NMCB-62 uses a format which incorporates both plans on one. For our Seabees whose ratings encompass so many

Seabees CAN manage!

(Continued from preceding page)

of the usual building trades, preparation of the forms is a valuable exercise in research of plans and specifications, particularly the latter which are not normally provided on our projects. Basic references for this are provided to each company.

Project superintendents must know the status of their project material at all times, including that of their subcontractors. The important points here are: insuring timely ordering; scheduling deliveries by the material liaison office to the job site; placement of the material to minimize handling and work interference; inspection of materials to verify size, quantity and condition; and follow up on those orders over 30 days old. Much of this work is performed by company expediters, but project superintendents must insure that it is being done and track the status of all materials.

Finally, at the start of each new activity, the project superintendent and crew leaders meet with their crews and review procedures, plans, construction technology, quality control and safety plan. Updates are provided at the close of each work day to lay out the following day's work.

The small computer is revolutionizing construction project management for the Seabees on Diego Garcia. Project superintendents are able to load their own networks, adjust estimates, alter resources and analyze their progress toward project completion dates. The computer permits them to adjust their planning before getting too far in trouble. It has been enthusiastically adopted by the Seabee managers and with the eventual incorporation of other programs in the system, it will be one of the greatest management tools the Seabees have had available to them.

Battalion project coordination and management are effected through weekly operations meetings conducted by the operations officer and attended by project managers (company commanders), detachment OICs (on Diego Garcia), material liaison officer, safety chief, ROICC and equipment assignment officer. Each company commander reports verbally on progress with written summary reports submitted at the conclusion of the meeting.

Actual progress is monitored through time cards, daily activity reports and activity completion reports for an activity on the network which is 100% complete. With the advent of the computer printout, consideration is being given to eliminating at least one of the two reports.

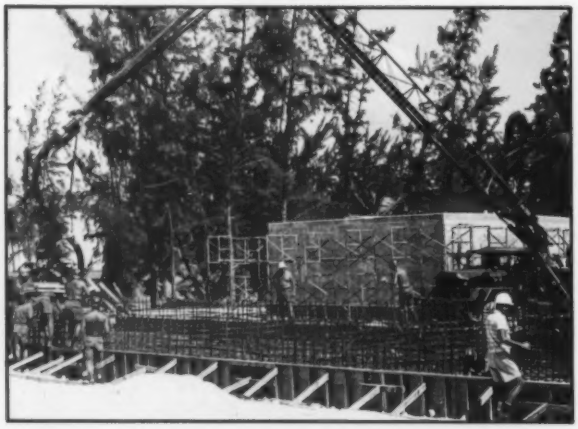
There has been no difficulty getting the networks and CPMs developed. The project superintendent has a direct hand in their development planning and tracking.

There is a tendency for planners to rely on original bills of materials rather than making an independent material take off oriented to individual activities. This practice delays identification of material deficiencies. Getting project superintendents to inventory and "sight" material was slow in evolving; but, once they realized the long period required to obtain materials from the U.S., management interest improved significantly.

Obtaining a thorough review and distribution of the QC and safety plans and the use of QC plans to train and brief crews have met with varying degrees of success. An attempt to complete all plans for a project before submitting them for approval, rather than a phased approach, would be easier to process. This would relate directly to current activities with timely information value to supervisors.

The construction management system that NMCB-62 uses exceeds all original expectations. Company commanders and project superintendents are planning well ahead, have an exceptional understanding of their projects and are using their resources more efficiently.

Seabees can and do learn and employ modern construction management methods!



CONCRETE is pumped into foundation forms for 568,000 liters (150,000 gals.) water storage tank on Diego Garcia site.

PRECAST PANEL is tilted into position as bulkhead for new bachelor's enlisted quarters on the Indian Ocean atoll.

• Gulfport, Miss.

Fighting Seabees? They're still with us . . .

By J03 ALAN WESTON
Naval Mobile Construction Battalion 133

"Fighting Seabee" evokes an image of a big, John Wayne type, building a bridge with one hand and defending the bridge against enemy attackers with his other. This is a glamorous stereotype, but really not too far-fetched as history has recorded many heroic acts of Seabees in battle.

Naval Mobile Construction Battalion (NMCB) 133 has had its share of heroes. In the Pacific Theater during World War II and more recently, in Vietnam, Seabees of the battalion engaged in construction work within combat areas.

And they defended themselves against the enemy forces during their construction mission.

Because of the constant possibility that NMCB-133 will be called upon again to fight while building, battalion personnel undergo steady military training which is a substantial part of the homeport period for all Seabee battalions.

The men of NMCB-133 recently concluded a five-month homeport stay at the Naval Construction Battalion Center (NCBC), Gulfport, Miss., prior to deploying to Rota, Spain. During that period, all hands in the 762-man battalion participated in extended military training.

All personnel fired the M-16 rifle and/or the .45 caliber pistol for qualifying scores at the nearby Keesler Air Force Base small arms range. A working knowledge and proficient firing of these arms are necessary, as they are the basic weapons of individual defense for Seabees.

Firing at the range was a significant, but a small part of the total military training program. The typical NMCB-133 Seabee spent two weeks sharpening his other military skills, in addition to shooting the range.

A majority participated in a two-week military training course provided by the Twentieth Naval Construction Regiment (20th NCR). During the course, the men were instructed in weapons handling, defensive combat tactics, and reaction to nuclear, chemical and biological attacks. The course was highlighted by a one-day tactical exercise, in which the men used weapons loaded with blanks to defend positions against "aggressors."

The 20th NCR also conducted two weeks of training with crew-served weapons — the M60 machine gun and the 81mm mortar. A group of 130 men from NMCB-133 trained with the weapons, which are the battalion's heavy armament in combat situations. The training consisted of one week of classroom instruction and practice with dummy rounds, followed by four days of firing with live ammunition in which the gun crews qualified.

In the final month of the battalion's homeport the military training was put to a collective test. A four-day command post exercise (CPX) prepared the officers and chief petty officers for performance in a tactical situation. The week following the CPX, the battalion's field exercise (FEX) was held with all hands participating.

The exercise consisted of 60 hours of simulated combat at Camp Hill, Miss., an area which offered a variety of terrain — hills, valleys, meadows, forests, rock-covered ground and swampland. Under the watchful eyes of 20th NCR observers, the men of NMCB-133 put defensive combat principles into practice.

Seventy men of NMCB-133 had additional opportunity to sharpen their military skills. They formed a detachment which participated in Exercise Solid Shield '77, a joint services effort conducted in May. As part of the exercise, men of the detachment made an amphibious landing at Camp Lejeune, N. C., and once ashore, proceeded to carry out a construction/defensive combat mission.

LT. William T. Parker, NMCB-133's training officer, summed up the success of the homeport military training:

"The battalion came out of this homeport with an excellent background in military tactics and a familiarity with its weapons. Military training was especially important this past homeport, as we are the Atlantic Alert Battalion and as such are required on short notice to redeploy and carry out whatever construction and military requirements are placed on us."

A testimony to the success of the military training on a personal level came from 19-year-old Seabee Joseph Dias. He reported to NMCB-133 in February, and said, "I really didn't have any military experience. The only gun I'd fired before coming in the service was a BB gun."

Since joining NMCB-133, BUCA Dias has completed the two-week military training course, giving him a basic understanding of defensive combat. He posted a score of 170 shooting the M-16 at the range, earning the designation of expert.

Through military training, he is developing into a fighting man, as through builder's school he began development into a constructionman. Although he may never build a bridge and defend it at the same time, he has learned that a Seabee must be proficient at both tasks.

By CAPT. GERALD McMAHON,
USAF
E.I.T., N.Y.

a view from out

• Gulfport, Miss.

A regular Seabee battalion has one and only one Captain. There is one battalion, however, Naval Mobile Construction Battalion 74, which has two captains whose Commanding Officer likes to say, "there is a Captain and the *Captain*."

There is little doubt that the Commanding Officer means that he is "THE Captain."

But who or what is "A Captain?"

The answer to that one often causes more questions, than it answers. "A Captain" refers to me, Captain Gerald McMahon, United States Air Force.

But let me explain before all those questions come rushing forth.

I am an Air Force Civil Engineering Officer serving a two-year tour with the Seabees as part of a continuous Air Force/Navy Officer Exchange Program. The program calls for a number of Navy Civil Engineer Corps officers to crossover to the Air Force for two years to serve in a variety of civil engineering duties. A like number of Air Force Civil Engineers join the Navy for two years, filling billets in either a Public Works Center, a ROICC Office, or the Seabees.

NMCB-74 has been designated as the host Seabee command for the program. The program's hoped for result is a cross pollination of ideas between the services and a better mutual understanding of how each service operates.

For the past two years, I have been assigned to NMCB-74 as the only Air Force Seabee in the whole wide world!

Quite a distinction and privilege, as I was to learn subsequent to my initial shock. During the two years I have gained a great deal of practical experience and I hope that I have contributed at least a little to the battalion and to the Seabees.

But let me now return to the beginning and tell my story.

It was early May 1975 when I received notification that I was being reassigned from the 4500th Civil Engineering Squadron at Langley, AFB, Va., to the Air Force/Navy Exchange Program.

Where exactly was I going?

"Some place called Gulfport, Miss., to be a Seabee, but I wasn't going to spend much time there." Something about an eight and six deployment rotation cycle, whatever that was!

By mid-May I had made my move and arrived in Gulfport, a quiet and sedate place compared to the air bases with their brisk flying activity to which I had become accustomed. I checked into the battalion and was told that I was to be the assistant operations officer during the upcoming European deployment.

I figured I was in for a hectic time because the incumbent was all too anxious to turn over the job, and everyone else just smiled upon learning of my assignment. But even before I could really get settled into the job there was a severe case of culture shock to overcome.

Imagine green utility uniforms starched so you couldn't move in them, those garters (or blousing straps), and buttons — not zipper flies. And there were those morning formations and a very strict military structure. All these are very foreign to an Air Force Officer accustomed to the much more relaxed but business-like environment of the Air Force.

But the time for adjusting was short, for the last two months of the battalion's homeport quickly passed and it was soon time to depart for Europe and the deployment site at Rota, Spain.

Once on Seabee deployment in Rota, the complex and widespread nature of a battalion's activities became very apparent. Besides the expected construction effort, there were the requirements to run a separate disbursing office, a separate galley, a separate yet complete supply department, and even a laundry. This was quite different than in the Air Force where these functions are consolidated and provided by specialists. At times the diversion of trained Seabees to such functions as special services, the master-at-arms force, and the laundry seemed a senseless waste of skilled manpower, but the realization was that such support functions are necessary to make the unit self-sufficient.

As assistant operations officer, I was lucky to be exposed to the many and varied pressures and problems which affected the day-to-day activities of the battalion. Shortages of materials, design errors, lack of available manpower, unavailability of equipment, and special training requirements, all influenced what was, in fact, accomplished.

Again, the battalion is looked upon to be self-sufficient and to work out many of these problems.

There was the opportunity to visit detachment sites in Greece, Italy, and Scotland and observe their operations in environments very much independent from that of the main body.

Of course there was the inevitable paperwork in which any battalion officer finds himself immersed. Reports and messages were sent to and from nearly everywhere, and the daily need for photos and slides that were necessary to keep the higher headquarters aware of on-site construction progress. Those darn situation reports seemed to be due as soon as the last one was completed.

But all was not work. There were the weekend tours to see Seville, Granada, Cordoba, and the many other sites of southern Spain. Bullfights and fiestas, trips to bodegas (wineries), and ancient cathedrals, all these were available to anyone who sought them out. And while I didn't get a chance to go (a situation report was due, you see), some Seabees made it to Innsbruck to see the 1976 Winter Olympics. More than enough opportunities were there for those who took advantage of them.

It was a busy eight months and all too soon it was time to prepare the flight manifests for the home trip to Gulfport, Miss., and homeport routine, preparing for another

of the blue

deployment.

Homeport proved to be the least spectacular of my months with the Seabees — to say the least. Often it seemed like I was treading water for six months, trying to keep myself above the sea of paperwork, and ready for next deployment when there would again be a chance to be productive and active.

Of course, part of the frustration with homeport was brought on by my knowledge that I was to have my own detachment at Subic Bay, Republic of the Philippines, during the next deployment.

What organizational structure should I use? Whom should I select to be in the detachment? What should the distribution of responsibilities be? What projects would we be tasked with? What problems would we encounter? What condition would the equipment be in? Would we have the types of equipment we needed?

All these questions and more had to be answered before we left homeport.

August 18, 1976, arrived and I set out with 37 other Seabees on the advance party to take over the Subic Bay deployment site from NMCB-62. Lt. Don Keith, officer-in-charge of NMCB-62's Subic detachment, had everything in good shape and the turnover went smoothly. On September 1, we took over the site and the whole show was ours.

For the next eight months, I was to enjoy what must be one of the most challenging and rewarding billets to a Civil Engineer Corps lieutenant. The Subic detachment site is unique in that it has its own camp and manages its own expense operation budget. The magnitude of the operation required full efforts by each man.

Chief petty officers (CPOs) filled company commander jobs usually held by commissioned officers within the battalion's main body.

First class petty officers filled jobs of CPOs, and second class petty officers served as the crew leaders on the jobs. This resulted in a very definite growth experience for all involved.

For me, as officer-in-charge, there was the chance to try out all those ideas on management and leadership that I would never have been able to do if within the more constrained environment of the Battalion Main Body — or in the Air Force. The development of an esprit de corps among members of the detachment and fostering goal orientation among the individual nail-pounders and lever-pullers on each job were big initial challenges.

I basically had an opportunity for doing things my way, and was told to make on-site decisions myself — a very rare and meaningful experience. Projects moved gratifyingly to completion on or ahead of schedule. Crews seemed enthusiastic about the quantity and types of jobs and morale appeared high throughout the deployment. For instance, the flag football and slow pitch softball teams were very successful in their efforts — winning their championships! I will long cherish the memories of the great feeling of accomplishment that all of us had.

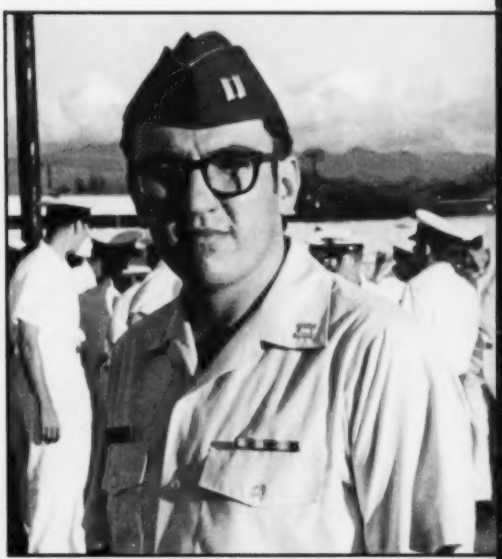
But soon, all too soon, it was time to leave. Time to turn loose the reins to those relieving us, and to board the flights homeward-bound. And for me it was also time to say farewell to the Seabees.

My two years of exchange duty were over and a new captain, Captain Neil Fravel,USAF, was on board to replace me. I go back to the Air Force much richer for the experience I had with the Seabees.

I will miss all the rapid service that a telephone call started by, "this is Captain McMahon" brings on a naval base. Seems that the Air Force has a few more Captains and knows that I am more likely to be an 0-3 than an 0-6!

But most of all I will miss the people from the non-rate on up, for it is they who make the Seabees what they are. To each of them, I say thanks and best wishes.

CAPT McMAHON's breast pocket says it all — "the only Air Force Seabee in the whole wide world!"



THE AUTHOR with 'his' Seabees scrambling for muster in the background.

Amphibious Operational Readiness

• Little Creek, Va.

The formal Operational Readiness Inspection (ORI) has been a fact of life within the operating forces for years, and unfortunately (at least in the author's view) it has not often come into full play within the Naval Construction Force and Navy Special Operating Units.

However, during January and thereafter, the Commander, Naval Beach Group TWO, conducted a major battle problem and a series of graded "selected readiness exercises" which involved nearly total commitment of his assets.

These exercises tested every mission area and represented the first time of record that the full spectrum of capabilities of Amphibious Construction Battalion Two (ACB - 2) was demonstrated.

A properly conducted ORI is a hard-nosed test of a unit's readiness to perform its total job. Response must be accomplished in strict accordance with standard operating procedures (SOP) and safely within the allowed time. Failure to adhere to the SOP, excess use of time, or any significant safety violation results in an "UNSAT" for the entire operation with a retest required.

The ORI is usually divided into phases which match the unit's mission and closely approximate those actions necessary to become combat effective.

To initiate the ORI, the commander conducting the exercise issues a letter of instruction (LOI) and usually without prior notice. This LOI spells out in detail the readiness exercises to be conducted, area of operations (actual deployment may be required), schedule of events, supporting units (who may or may not be concurrently inspected), responsibilities of all participants, command relationships and specific areas for evaluation. The letter is issued approximately ten days prior to execution.

The first phase which the unit must perform is planning. Detailed information must be added to the operation order for the conduct of assigned tasks. Developed under an extreme but realistic press of time the information must contain all planning data for embarkation (i.e., checkoff lists of personnel, equipment and supplies). This is closely examined for adequacy by evaluators.

After completion of the planning, publishing of the operation order, and preparation of all assets for deployment, the embarkation phase begins with the staging of personnel and gear, formal inspection and actual embarkation for transport to the objective.

Upon arrival in the operations area, the "bottom line" is really whether or not the unit can "do its thing." The umbilical cord to a parent unit or another for outside support is cut for the exercise. As stated by a chief observer - "If you didn't bring it with you--*forget it!*"

For ACB-2, operations consisted of participation in a coordinated ship-to-shore logistics and beach support exercise plus specific problems such as causeway operations, buoyant and bottom laid fuel systems, side-loading pontoon causeways, pontoon causeway connections, communications and security.

The actual battle problem was conducted during heavy icing conditions and sub-freezing temperatures. The weather presented unusual problems and an interesting parallel to last year's North Atlantic operations.

Particularly taxing for all units was the perimeter defense problem which involved attempted (and in some cases successful) penetration by highly trained Seal Team personnel during hours of darkness. Deficiencies in military training, especially in weapons, sentry discipline, field communications, and small unit tactics, quickly come to the fore under the realistic test. The overall battle problem demands the accomplishment of stated operations. The "selected readiness exercise" requires each step to be completed successfully in strict accordance with procedures, time constraints and without safety violation.

Each evolution is closely monitored by astute observers armed

with myriad checklists and evaluation forms. "Murphy's law" often comes into play adding elements of mental strain and fatigue to the testing process.

The rigorous character of the evaluation process makes satisfactory completion by a unit of all evolutions the first time extremely difficult. To fail, to retrain and then pass reexamination professionally matures a unit. Combat and combat support units need to be tested beyond their structured capabilities and endurance. Too often units are not truly tested by the admin/material inspections, mount-out exercises or similar tests which do not demand total commitment to a war-related scenario and the realistic action under pressure if not actual duress.

CDR. J. L. CLEARWATER, CEC, USN
Commanding Officer
Amphibious Construction Battalion TWO
P.E. - Delaware

Based on the author's observations, a well planned and coordinated ORI may be equally useful to Navy Special Operating Units and the Navy Construction Force as it is to the tactically oriented units such as ships of the line.

The primary problem stems from difficulties in deciding which of the unit's missions can and should be tested and what parameters should be used to establish pass/fail criteria. It is very easy to rationalize and decide that many tasks are not amenable to rigid performance evaluation or that the ORI process is simply not applicable to certain types of units. In the author's view, if the unit in question must operate in a hostile environment in a combat or combat support role a prima facie case exists for subjecting that command to the often feared but most beneficial ORI.

AMPHIBIOUS SEABEES ready to 'beach' their equipment during ORI — operational readiness inspection.

INSTALLATION of amphibious assault bulk fuel system. Omnipresent ORI evaluator is in white hat.

FUEL ELEMENT places power tong to begin pipe assembly for the bottom lay fuel system.

BARGE FERRY with bottom lay fuel system arrives at beach for Seabee installation.

• Gulfport, Miss.

Thousands Complete Gulfport's Naval Construction Training

JO2 DOUGLAS D. DAVIS
Naval Construction Training Center

The increasing commitments in Southeast Asia in 1967 required additional Naval Mobile Construction Battalions (NMCB) and generated need for experienced petty officers to man the ranks.

To meet shortages, the Direct Procurement Petty Officer Program was instituted. To indoctrinate and properly prepare these directly procured petty officers special schooling was required. The Secretary of the Navy established Naval Construction Training Unit, Gulfport, Miss., for that purpose in June 1967. The unit was placed under the command of LT Joseph B. Leap, CEC, USNR, and was granted $32,700.00 for the first two quarters of FY68, to establish and operate the command.

The first job was to establish a thorough training schedule. This program provided five weeks of intense academic instruction in general Navy and Seabee subjects preparing the directly procured petty officers for early usefulness to the Naval Construction Force.

In January 1968 the staff consisted of 62 military and civilian personnel. This was the year of growth, as Naval Construction Training Unit-Gulfport expanded its basic mission to include training of individuals from Gulfport-homeported battalions in Special Seabee Training Courses, providing them with additional knowledge and skill necessary to expedite construction at deployment sites abroad.

By August 1968 the staff had increased to a total of 129 personnel and the first formal course, a Construction Mechanic "C" Course, Automatic Transmissions, was developed and added to the curriculum. The first automatic transmission class graduated in February 1969.

In 1970 there were over 4,100 graduates of Special Seabee Training and in February 1971, the Direct Procurement Petty Officer Program was terminated after having trained 10,304 men.

In April of that year a pilot 22-week training program for 4X10 Reserve Recruits was initiated. Two hundred thirty-nine men completed this program before it was shifted to the larger training commands.

A four-week Construction Apprentice Indoctrination Course was established in July 1972. This course was designed to provide an overall Seabee indoctrination to recent recruit training graduates who would be entering the Naval Construction Force without the benefit of an "A" School. At the same time, Construction Training Unit Gulfport moved into new applied instruction and administrative buildings. During the remainder of 1972, over 700 students graduated from the Construction Apprentice School.

Also during 1972, command and support responsibility for Construction Training Unit Gulfport was shifted from the Chief of Naval Personnel to the Chief of Naval Technical Training. The Chief of Naval Training (now the Chief of Naval Education and Training), Pensacola, Fla., became the major claimant in lieu of the Commandant, Sixth Naval District.

From August 1971 to March 1974, LCDR J. T. Prather, CEC, USN, was commanding officer. During this time, Naval Schools Construction, Davisville, R.I., was disestablished, Construction Training Unit, Gulfport was redesignated as Naval Construction Training Center (NCTC), and the "Mirror Image" concept of training was conceived.

The "Mirror Image" concept of training is a program designed to provide identical training in virtually all courses offered at both Naval Construction Training Center, Gulfport and Naval Construction Training Center, Port Hueneme, with the exception of five courses single sited at Gulfport and four at Port Hueneme.

October 1976, brought the transfer of Disaster Recovery Department functions from the Construction Battalion Center (CBC) to the NCTC. Disaster recovery, along with other subjects not specifically applicable to any one rating, were incorporated into the Special Schools department.

In December 1975, Naval Construction Training Center, Gulfport received accreditation credentials from the Southern Association of Colleges and Schools-

Commission on Occupational Education Institutions.

Approximately 6,300 students will have received training in disaster preparedness at Special Schools department in courses such as cardio-pulmonary resuscitation, decontamination, rescue and first aid, during the first year with NCTC. Also during FY77 a total of over 3,000 personnel from Gulfport-homeported battalions will have received Special Construction Battalion Training and approximately 1,400 students will have attended class "A," "J" and "C" schools.

As FY78 nears, with a projected student load for formal and Special Construction Battalion Training of almost 7,000, Gulfport's "Mirror Image" shines brightly, reflecting great determination and pride in professionalism as the staff of 202 carries the well known "Can Do" spirit.

Saudians At NCTC Port Hueneme

By J03 R. G. GROVER
NCTC Staff Journalist

• Port Hueneme, Calif.

"The best yet!"

That's what two students from Saudi Arabia said recently about the instruction they received while at Construction Mechanic (CM) "A" School, located at Naval Construction Training Center (NCTC), Port Hueneme.

The two Saudi Arabians are assigned to the school under the Security Assistance Training Program. This program exists to provide skills needed for effective operation and maintenance of equipment that has been acquired from U. S. sources (either grant aid or foreign military sales) by the foreign nation. The mutual program enables promotion of rapport between forces of the participating nations. Through these efforts, foreign visitors also receive a better understanding of the U. S., including its people, political system and other facets of American life.

Chief Petty Officers Ali Saleh Sebran and Saleh Ali Al-Torbaq were assigned to the U. S. for extensive training in the mechanical field in late 1973. Since then, they have attended English Language School at Lackland AFB, Recruit Training at San Diego, Propulsion Engine "A" School and GM "C" School at Great Lakes, 3-M Systems, damage control, fire fighting and assault boat engineer training at Norfolk.

They have also trained on board an LCM (landing craft, mechanized), attended air conditioning and refrigeration school with assignment to shop training afterwards, been assigned to B-250 bomb training (used in fire fighting), attended Carburetion School, Detroit Diesel and Fairbanks Diesel Engine School at Great Lakes and finally reported to CM "A" School here. This is to be their last assignment before returning to Saudi Arabia.

In justifying their compliments on the CM training, they mentioned that their instructors were compatible and their training methods easily understood. Both Saudi chiefs agreed that the presentation of material, thoroughness of training and depth of material covered was more than sufficient.

Regarding relationships with his fellow students, Chief Al-Torbaq commented, "We are all like brothers."

The two chiefs blend well with the other students in and out of class training.

In this country for nearly 3½ years, the two Saudi Arabians have adapted well to American life. Any minor cultural gaps were overcome soon after arriving in the U. S. In fact, they were thoroughly educated in the language and customs of this country throughout their basic schooling.

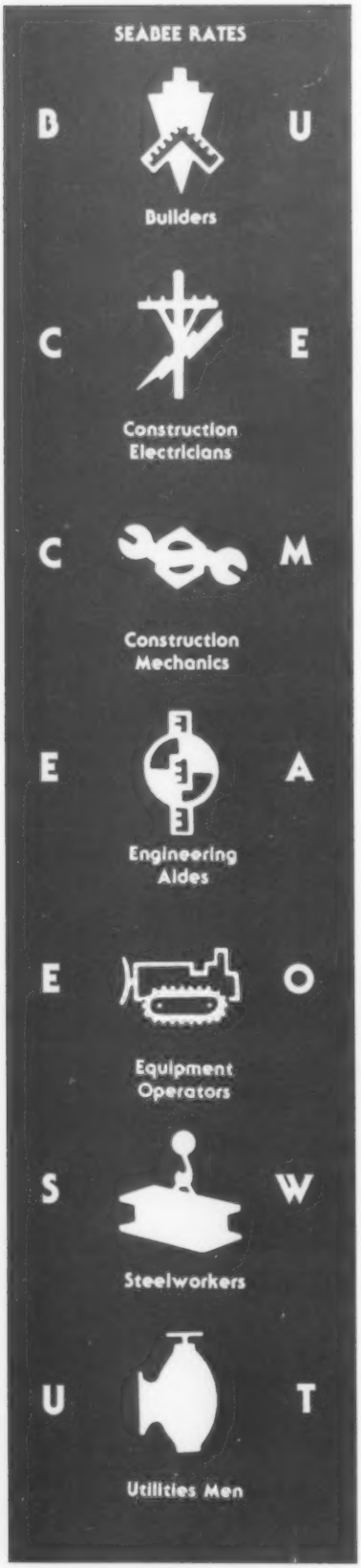
Both chiefs enlisted in the Royal Saudi Naval Force (RSNF) under a program that guaranteed them automatic promotion to chief petty officer. After they complete their schooling here and return to Saudi Arabia, they are obligated for another five years of service.

Upon completion of CM "A" School they will be able to use and care for mechanic hand tools, shop equipment, special tools and precision instruments used in the repair and maintenance of gasoline, diesel and multi-fuel engines.

They will be able to diagnose and correct malfunctions in these engines and will have the ability to take apart and put together gasoline engines.

Further, both men will learn to disassemble,diagnose, inspect and assemble automotive and construction equipment power trains (transmission, clutch and steering gear).

Both chiefs have hopes of staying on at NCTC in order to take advantage of the more advanced CM "J" School offered here. However, they feel that presently their government desires them to return soon to use their newly developed skills in the mechanical field. They have both affirmed that their training here has been invaluable and "will be of great use" to the RSNF.



Rear Admiral Donald G. Iselin, CEC, USN
Commander
Naval Facilities Engineering Command
And
Chief of Civil Engineers

Rear Admiral Kenneth P. Sears, CEC, USN
Vice Commander
Naval Facilities Engineering Command
And
Deputy Chief of Civil Engineers

Rear Admiral Neal W. Clements, CEC, USN
Commander, Construction Battalions, Pacific
And
Commander, Pacific Division, NAVFAC

Capt. John Paul Jones, Jr., CEC, USN
Commander
Construction Battalions
Atlantic

Seabee Journal '77 Was Produced By The Editors
Of The

NAVY CIVIL ENGINEER

(Continued from page 7)

acles and corrosion. Pulling the buoy out of water, cleaning it, repainting it and installing new fenders is expensive, especially when required so frequently. NAVFAC has instituted a program where buoys are now coated with fiberglass. Pacific Division (PACDIV) has used a fiberglass polyester resin coating on the exterior of their steel mooring buoys set in a very harsh environment. Indications are that fiberglass buoys may be protected for up to 15 years before recoating is necessary. However, the program has not been fully funded, nevertheless, it is NAVFAC's plan to coat all fleet buoys as funds and time permit.

This program is of vital importance to the fleet — particularly where port congestion does not allow many ships to tie up to the pier. The branch in headquarters is now endeavoring to increase the funding support for maintenance and overhaul of fleet moorings. The present funding level does not allow NAVFAC to provide all the support required in this area.

REAL PROPERTY MAINTENANCE ACTIVITIES

The facilities maintenance division is involved in a dramatic new movement to improve the maintenance and repair of shore facilities in the Navy. The effort is intended to increase the shore establishment's ability to respond to the fleets' operating requirements.

Many in the field may have heard the acronym "RPMA," "new initiatives in RPMA," etc. Well, what is "RPMA" anyway?

"RPMA" stands for real property maintenance activities. It is a Department of Defense (DoD) term describing the management and engineering functions involved in shore facility maintenance and operations: recurring maintenance (M_1), major repairs (M_2), minor construction (R), utility operation (N) and other engineering support services (P).

The RPMA program is mandated by DoD. DoD establishes overall policy in the RPMA area and monitors the program closely.

For the Navy, the Chief of Naval Operations (Op-44) is the sponsor for RPMA. Beginning in 1975 Op-44 (RADM Robert F. Jortberg, CEC, USN) surmised that the Navy had fared very badly in the area of RPMA funding because no concentrated effort had been made in the programming cycles of the planning, programming, budgeting system (PPBS). Just to maintain level funding from 1966 to 1976, the Navy would have required $700 million more (in 1977 dollars).

Following that conclusion RADM Jortberg began the development of a concept to improve upon the Navy programming for RPMA. That concept is what has been called the "new initiatives in RPMA."

Essentially the concept calls for a much more active role for the major claimants than in the past. Rather than addressing the RPMA areas, particularly for maintenance and repair funds, as one large sum, Op-44 decided to use an approach similar to that used in the MCON program.

The same grouping of facilities into investment categories is used to better link the deficiencies to operational requirements. Breaking the facilities down into investment categories also makes it easier to relate the requirements in such a way that other sponsors such as Ops-02 and 03 for waterfront operational facilities and Op-05 for aviation operation facilities are able to assist Op-44 in justifying the requirements for funds.

The analysis of investment categories by the major claimants and and assessment by them of the condition of their facilities reflecting on their mission is a new approach to the maintenance and repair funding requirements for the Navy. This type of information is used to project long range programming for the Navy in the RPMA area.

Another innovation is looking at the Navy's MCON and RPMA programs as closely related and interdependent. Decisions made in one area inevitably have consequences in the other area.

As a part of the "new RPMA initiatives" the activities have been asked to revitalize their annual inspection efforts and the resulting summaries. From these annual summaries the Navy's backlog of maintenance and repair (BMAR) is developed. The BMAR is a significant factor, when broken down by investment category, in the assessments made by the major claimants and the CNO in evaluating and deciding upon the funding requirements for RPMA in the Navy.

To provide the CNO with the professional staff support to continue to improve the Navy's performance in planning, programming, and budgeting for RPMA, a new branch is being established in the facilities maintenance division. This branch will devote full time efforts to support the CNO in his efforts to obtain more funds for the Navy's RPMA program.

NEEDS — Two distinct types of people are necessary to make Facilities Maintenance Management work — the "nuts and bolts" answermen who know the mechanics of problem solving; and the "administrative procedures" answerman who knows what is legal, affordable, and manageable.

editor's note

'Everyone Ought To

OPINION AND OUTLOOK

By T. C. MURPHY
Professor Emeritus, CECOS

Ever since bureaucratic botchulism was identified by T. L. Martin as an occupational disease, interest in organizational pathology has led to more intensive studies of managerial afflictions. The latest to be tentatively identified is referred to as *executive oughtism* — "tentative" because although much evidence has been collected analysis of the data is still not complete.

No connection has been found which associates it with the childhood affliction of autism. The autistic child withdraws from the world, in fact, excludes himself from it. The oughtistic executive, on the other hand, manifests behavior of an opposite kind—he intrudes into everybody's world.

The symptoms take the form of what seems to observers to be a compulsion to dictate what contemporaries and subordinates *ought* to believe; what they *ought* to do; and how they *ought* to live. In many cases it extends to the sociopolitical attitudes they *ought* to cultivate and what the world *ought* to be. (Curiously, these symptoms seem not to be present in his relations with his boss.)

The malady is not always confined to organizational relationships. In a significant number of cases it has been noted in the oughtistic executive's home environment, resulting in predictable strategic reactions by wife, children and pets.

In the organizational setting, reactions by associates to those afflicted with oughtism are varied. Orally, he is referred to in a number of creative ways.

The malady is not confined solely to business and industrial organizations. It has been identified in religious, military, political and academic groups, and statistically more often in the latter two. It has also been keenly observed in matriarchal organizations such as the PTA and Women's Lib, where it is rampant, although researchers have been prevented from studying it in those climes. Officials of these organizations generally insist upon the unilateral right to prescribe how the research ought to be conducted and reported.

While the casebook on this ailment is far from complete, the following items may serve to illustrate its symptoms.

Read This Article'

ITEM — In August 1976, a Cincinnati philanthropist who had already given several million dollars to the community, gave an additional $160,000 to build an acoustical shell for the music hall. Someone in the city government, apparently in the comptroller's office, identified the gift (for bookkeeping purposes) as an "unrestricted capital fund," which by city ordinance "ought to bear a 3.8% service charge" of $6,080. Consequently, the donor was sent a bill for that amount.

ITEM — The city council of Stanfield, Oregon, in May 1975, passed an ordinance which prohibits sex acts by domestic animals within view of the public. Presumably the council's position was that such an act constitutes exhibitionism. (Technically, of course, this may be correct.)

Owners of the animals found in violation of the law are subject to a fine of not less than $15 or a jail sentence of up to 25 days. The penalty for second and third violations was not made clear.

This is a rare case for at least two reasons: first, it is an example of collective oughtism whereas most oughtistic acts are unilateral; and second, most oughtistic executives confine their dicta to the human race and do not normally project themselves into the animal world. Apparently this is so because they believe that there is still "so much to be done for the human race."

ITEM — At San Jose State University in California, Rev. R. C. Hoch teaches a course for a fee of one dollar. When the course was completed late in 1976, someone in the payroll department sent him a check for seventy-seven cents. Twenty cents for federal income tax and three cents for state income tax had been dutifully deducted.

ITEM — An employee of the Newark, N.J., office of the Internal Revenue Service recently purchased a hearse and drove it to and from work. The employee was told that his vehicle "did not enhance public respect or confidence [sic] for the Service. . . . This vehicle detracts and causes unfavorable attention and less than desired esteem and respect for the Service."

On the surface, this case might appear to contain implications regarding the legal right of parking lot owners to prescribe the types of vehicles using the lot; or, an example of a civil servant expressing an intense sensitivity to public opinion. This might be understandable, for, at the very least, the sight of such a vehicle, parked daily in an IRS parking lot would probably generate a flood of sly or crude comments. "They use it to haul in violators." "How come they don't use an ambulance?" "It's the Director's official car — a symbol of his office," etc., etc., etc.

But none of these is correct. In the first place, the owner of the parking lot (and building, office equipment, etc.,) is *not* the IRS but the public — which might believe the vehicle quite appropriate to the place. Second, such a sensitivity of IRS executives to the public would put a strain on the imagination. Occam's razor suggests a simpler explanation and there is one: This case is a representative symptom of advanced oughtism.

ITEM — At an Illinois high school several years ago, the principal ruled one schoolgirl could not be a candidate for Homecoming Queen since she was an unwed mother. The principal ruled that candidates for this annual ceremony "ought to be virgins."

This is an interesting case because of several intriguing reactions to it. First, someone asked how he proposed to qualify the remaining candidates, which led to many suggestions pertaining to "eligibility tests" and their administration. Next, someone asked if the rule shouldn't be broadened to include candidates for student body office, the glee club, the football team, etc.

The issue has not been entirely resolved; in the meantime, however, the principal has moved to a remote area where he has accepted a position as curriculum advisor to the assistant deputy for curriculum development.

These examples indicate several of the forms that oughtistic behavior takes. There are others.

No certain cure for oughtism exists at this time, but a lot of people are working on it.

Millions of people.

Every day.

'The future is purchased by the p

Greetings to all hands!

I am both proud and honored to attempt to fill the big, big pair of shoes bequeathed to me by our former Chief, RADM A. R. "Mike" Marschall. Fortunately for me, the shoes are pointing in a forward direction.

I will need lots of help, and I hope to be able to count on each of you for solid support in the months and years that lie ahead.

I foresee many challenges, many opportunities, many satisfactions, and many rewards available to all of us. Just how these will come out in the balance for each of us will be determined largely by our attitudes, our dedication, our industry, and our application of our skills.

I would like to share with you some of my thoughts and philosophy as we look ahead together.

The eminent English writer, Samuel Johnson, once said, *"The future is purchased by the present."* Mr. Johnson and I are in full accord. The future of the Naval Facilities Engineering Command and the Civil Engineer Corps will be determined by the kinds of actions, plans and policies we initiate today. In order to build for the future of the Navy, we must evaluate our current contribution, determine the areas of potential improvement, and set our sights on making a very fine organization even better.

We must take an honest look at our current inventory of skills, tools and talents; examine those assets in terms of our mission and available resources; and chart a course that will result in the best possible service and support for the Navy. Thus, my primary objective as Commander, Naval Facilities Engineering Command and Chief of Civil Engineers will be to do everything within my power to help make the United States Navy the world's finest!

To begin that job we must make several commitments. We must first commit ourselves to strive for a full understanding of the functions, the needs and the demands of those organizations we serve and support. As the Navy's technical expert in facilities engineering, we must carefully translate our "customer's" expressed needs into specific engineering criteria and designs that will give him the best possible facilities and support systems to meet his requirements. In order to interpret properly the customer's requirements we must take the time and make the effort to comprehend fully his mission and his operation. Only then can we be in position to meet his needs by using our technology.

A second undertaking which will benefit the Navy is a commitment to investigate thoroughly how to keep our existing facilities going at the minimum long-term cost. In order to determine the best approach to the problem of maintaining the Navy's thirty-five billion dollar physical plant, we must possess or develop certain capabilities. We must develop a personal capability for rapidly assessing the general condition of each base's facilities. We must become well-grounded in highly effective technical methods of repairing, fixing, correcting and expanding the life of the Navy's facilities. We must recognize and quantify the consequences of reduced or deferred maintenance, and convince our seniors at the same time. We must enhance our methods of converting older structures into useful facilities within the constraints of the commanding officer's or major claimant's O&M,N authority.

In many of the above areas I'll wager that we can do better than we are now doing. In short, we must become fully objective in assessing the effectiveness of our varied public works efforts in order to direct our scarce resources toward the areas where the overall pay-off will be the greatest to the Navy.

Thirdly, we must commit ourselves to become knowledgeable in the dynamics of the system in which we function. We must become adept at handling the complexities of the Navy and government systems. We

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resent.'

By REAR ADMIRAL DONALD G. ISELIN, CEC, USN
Commander, Naval Facilities Engineering Command
and Chief of Civil Engineers

must become well versed in handling the facilities projects manual. In order to provide adequate technical assistance to each activity we serve, we must know the right way to fund our projects, the proper procedures for obtaining that funding, and where to go for help in a crunch.

Obviously, much of my personal effort will be devoted to NAVFAC Headquarters. As I see it, the role of NAVFAC Headquarters is to fly cover for the entire facilities operation. It is our responsibility to provide the best possible support to the people in the field who deliver on our commitments. It is our job to make sure that appropriate weight and reasonable attention is focused on every aspect of our business.

At NAVFAC Headquarters, we must also provide an effective interface with the rest of the Navy and the many interests outside the Navy. Our job is to recommend broad policy to the Chief of Naval Operations, assist him in developing a realistic annual Military Construction Program, and guide him in the development of facilities project priorities from a Navy-wide standpoint. We are pledged to fight for high enough RPMA resources to keep facilities from limiting the operational Navy. We are committed to develop technical maintenance standards and policies, and to provide our engineering field divisions the guidance and resources to complement and assist the field public works officers.

In the broadest scope, all of us together in Headquarters and field are committed to run the Navy's construction operation; to play a dominant part in the Navy's facilities planning effort; and officially to "worry" about the entire facilities maintenance problem!

How should we handle that full bag of responsibility? If we knew *where* we wanted to go and *what* we wanted to do there, and could communicate that information to responsible people in our various offices and echelons, we would already have taken a giant step toward accomplishing our mission. Philosophically, that is what we are trying to do in developing and using NAVFAC's Command Management Plan. This valuable management tool allows us to chart our future course to attain maximum effectiveness, and to allocate our resources in accordance with specific measurable goals.

. . . and dedicated NAVFAC civilian is necessary . . .

The challenge to NAVFAC is to establish a set of goals and objectives that will represent the finest balance between money spent on facilities and the usefulness of those facilities to the operating Navy. Moreover, those goals must be communicated with such explicit clarity that they readily convey the intended message to those who eventually perform the work as well as to those who are responsible for developing the overall programs. I will talk more about the Command Management Plan in future articles. The challenge to each of us in our present jobs is to *learn enough, think enough, observe enough, plan enough, organize enough, inspire enough, and follow-up enough* to see that in fact, the Navy gets high pay-back for every facility dollar that we spend.

The Navy Civil Engineer magazine is an excellent vehicle for the kind of unobstructed upward and downward communications necessary to convey the thoughts, problems, ideas and innovations each of you has to contribute to the growth and development of the Navy's facilities management. I welcome comments, proposals and objections concerning any portion of the material covered; and look forward to seeing furthur articles expanding or discussing some of the points covered here.

The full participation of every Civil Engineer Corps officer as well as each dedicated NAVFAC civilian is necessary if we are to succeed in our primary objective.

By using our individual talents and by pulling together in a fully cooperative team effort we can indeed become part of the solution — and assist directly in serving and supporting the fleet and in making the U. S. Navy the world's finest.